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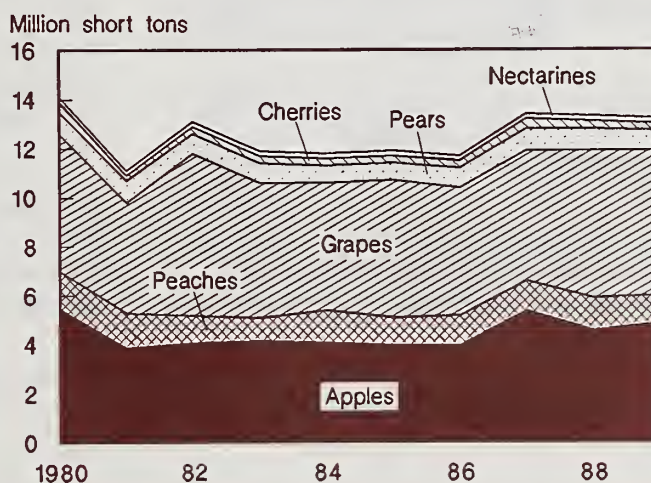
Economic
Research
Service

TFS-251
September 1989

Fruit and Tree Nuts

Situation and Outlook Report

U.S. Production of Selected Noncitrus Fruit



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Summary

U.S. Noncitrus Crop About Unchanged from 1988

USDA's August 1 forecast for the 1989 U.S. noncitrus crop, including the major tree fruits and grapes, was 14.4 million short tons, virtually unchanged from last year's 14.3 million, but 2 percent below 1987. The forecast reflects increased production of apples, apricots, tart cherries, and California dried prunes, which more than offset smaller harvests of peaches, pears, grapes, sweet cherries, nectarines, cranberries, and California plums.

The 1989 apple crop is forecast at 4.87 million short tons, 6 percent above last year, owing partly to an expected good crop in Washington State. Shorter supplies of some other fresh market noncitrus fruits are boosting grower prices this summer. Pear production is expected to be 3 percent less than last year, but prospects are for excellent quality in most production regions.

The August forecast for the U.S. grape crop was 5.89 million short tons, 2 percent below last season, but 12 percent above the 1987 crop. The U.S. peach crop, excluding clingstones, is forecast at 652,500 short tons, down 19 percent from last year. A smaller sweet cherry harvest this year also squeezed fresh market supplies over the past month.

Relatively lean inventories, strong movement, and forecast smaller crops, have strengthened contract prices for most canning fruits this year. Smaller supplies and heavy demand for clingstone peaches and bartlett pears probably will keep inventories tight and prices firm throughout 1989/90. However, processing demand for sweet cherries is expected to be soft this year because of heavy fresh market demand and large stocks of canned sweet cherries.

Smaller cold storage holdings, lighter Mexican imports, and short crops in Washington and Oregon have tightened processor demand for strawberries for freezing. In California, lower fresh market demand and prices have prompted some

diversion of fresh strawberries to the processing market. Similarly, short supplies of high-quality tart cherries for freezing and lower cold storage holdings have also strengthened processor demand. Short supplies have significantly boosted f.o.b. prices for both commodities this summer.

1988/89 Citrus Crop Up, Prospects Good for 1989/90

The final forecast for the 1988/89 U.S. citrus crop is 13.1 million short tons, up 4 percent from the previous season. With continuing grove recovery in Florida and Texas, citrus production may continue to rise in 1989/90. To date, most Florida groves are in good condition and recent rainfall has permitted growers to stop regular irrigation activities. Fruit quality is reported good, with little insect damage or wind-scarring. Prospects are also good for a quality navel orange crop in California.

Because of a relatively high juice yield of 1.55 gallons per box of oranges, and a larger 1988/89 Florida orange crop, processors packed 174.5 million gallons of frozen concentrated orange juice (FCOJ) this season, 2 percent more than last season. FCOJ movement from Florida was brisk until spring, when Brazil announced price increases following a tightening of its 1988-crop orange juice supplies and export prices rose sharply. Even with reduced imports from Brazil, however, Florida FCOJ supplies this season probably will surpass 1987/88's. Stocks are heavier this season than last due to larger carryin and pack.

Tree Nut Crop Down

U.S. tree nut production will drop sharply in 1989 due to smaller crops of almonds, filberts (hazelnuts), pecans, and pistachios. Walnuts and macadamias are likely the only tree nuts that will be larger than last year.

Despite lower production, tree nut supply for the 1989/90 marketing season (July/June) will be nearly the same as last because of larger beginning stocks. Grower prices may be up slightly.

Table 1--Economic indicators of the U.S. fruit and tree nut sectors 1/

Indicator	1981/85 average	Annual			Quarter/Month	
		1986	1987	1988	1988	1989
					I Quarter 2/	I Quarter 2/
Gross National Product (1982 \$ bill.)	3,360.5	3,721.7	3,847	3,996.1	3,956.1	4,077.5
GNP implicit price deflator (% change)	2.48	2.7	3.3	3.4	1.7	3.6
Disposable personal income:						
Total (1982 \$ billion)	2,370.93	2,640.9	2,686.3	2,788.3	2,762.3	2,870.8
Per capita (dollars)	10,093.6	10,929	11,012	11,326	11,260	11,592
Personal consumption expenditures:						
Food and beverages (1982 \$ billion)	413.0564	448	450.4	453.3	451.4	459.3
Civilian population (mil.)	232.5422	239.4	241.7	244.1	243.2	245.7
-- 1977=100 --						
Index of prices received by farmers:					July 1988	July 1989
All farm products	135.4	123	126	138	142	146
Fruit, all	163.0	169	181	181	194	159
Fruit, fresh market	172.2	177	194	194	210	164
Index of prices paid by farmers:						
All production items	151.4	144	147	157	159	165
Fertilizer	140.6	124	118	130	132	141
Ag chemicals	122.2	127	124	126	128	133
Fuels and energy	197.6	162	161	163	169	188
Interest payable per acre	239.2	211	190	186	186	190
Taxes payable per acre	128.2	138	139	142	142	144
Wage rates (seasonally adjusted)	146.8	160	167	172	177	186
-- 1982=100 --						
Producer price Indexes: 3/						
Consumer food, all	101.7	107.2	109.5	112.6	113.6	119.0
Fresh fruit	103.5	112.9	112.0	112.7	117.7	114.1
Dried fruit	96.4	91.9	95.0	99.1	99.3	102.8
Canned fruit	104.3	111.0	115.3	120.1	120.2	123.4
Frozen fruit and juice	106.4	103.0	113.3	129.9	130.5	129.0
-- 1982-84=100 --						
Consumer price index:						
All food	99.7	109.6	113.6	118.3	118.5	124.4
Fresh fruit	99.8	109.0	113.5	118.2	118.8	125.5
Processed fruit	101.1	118.7	132.0	143.0	147.8	150.6
Processed fruit	100.2	106.3	110.6	122.0	123.0	126.0

--Continued

Table 1--Economic indicators of the U.S. fruit and tree nut sector 1/--Continued

Indicator	1981/85 Average	Annual			Quarter/Month	
		1986	1987	1988	1988	1989
					July 1988	July 1989
			--1982-84=100--			
Farm-retail price spread: 4/						
Market basket	100.2	112.5	119.4	125.3	124.6	134.7
Fresh fruits	102.2	128.0	145.7	160.2	158.2	177.0
Fresh vegetables	99.8	116.8	126.5	141.3	140.1	147.1
Processed fruits and vegetables	98.6	106.4	108.3	111.7	110.8	123.2
Fruit and tree nuts:						
Citrus						
Production (1,000 tons)	12,417.4	11,051	11,968	12,728	N.A.	N.A.
Per capita consumption (lbs.)	109.12	117.25	112.82	113.61	N.A.	N.A.
Noncitrus						
Production (1,000 tons)	13,672.2	13,408	15,454	15,259	N.A.	N.A.
Per capita consumption (lbs.)	90.33	96.39	101.47	97.72	N.A.	N.A.
Tree Nuts (shelled basis)						
Per capita consumption (lbs.)	2.23	2.24	2.24	2.51	N.A.	N.A.
Exports, U.S.:					June 1988	June 1989
Fruits, nuts, and prep. (mt)	5,477	3,652	4,364	5,497	563	526
Fruit juices incl. frozen (mil. hl)	2,067	2,003	2,146	2,409	194	206
Imports, U.S.:						
Fruits, nuts, and prep. (mt)	3,939	4,637	4,840	4,797	128	131
Bananas (mt)	2,730	3,042	3,106	3,030	231	264
Fruit juices incl. frozen (mil. hl)	25,567	31,539	34,059	26,754	1,459	2374
					July 1988	July 1989
Real exchange rates, selected countries: 5/						
Canada (dollar)	1.1802	1.2421	1.1775	1.0689	1.0684	1.0864
Japan (yen)	260.4591	194.5361	172.9664	158.2690	165.2801	177.8215
United Kingdom (pound)	0.6197	0.6201	0.5537	0.5036	0.5280	0.5332
New Zealand (dollar)	1.2960	1.2757	1.0644	0.9359	0.9240	1.0504
Hong Kong (dollar)	6.1094	6.4873	6.3834	6.1989	6.3029	6.1028
Brazil (cruzado)	0.0674	0.0776	0.0701	0.0623	0.0626	0.0620
Chile (peso)	56.0666	81.9733	80.6402	81.6136	83.2436	78.6192
Taiwan (new dollar)	39.4322	41.2806	35.8744	33.0885	33.2501	29.7468

N.A.=Not Applicable

1/ See special article in this issue for a brief discussion of the economic indicators presented in the table.

2/ Quarterly data are seasonally adjusted at annual rates. 3/ Commodities ready for sale to ultimate consumer.

4/ Retail prices are based on indexes of retail prices for domestically produced farm foods published by the Bureau of Labor Statistics. The farm value is the payment to farmers for a quantity of farm product equivalent to retail unit, less allowance for by-products. 5/ Nominal exchange rates are adjusted by the ratio of the U.S. Consumer Price Index and the respective countries Consumer Price Index, with 1982 being the base year.

Legislative Issues

"Disaster Assistance Act of 1989" Extended to Orchards

The Disaster Assistance Act of 1989 (H.R.2467), which provides emergency crop loss assistance, was signed into law on August 14. The legislation includes provisions for assistance to eligible commercial orchardists who lost trees as a result of freeze or related conditions in 1989, with eligibility determined by the Secretary of Agriculture. Eligibility is based on a tree mortality rate of 45 percent or more after adjustments are made for normal mortality. The assistance provided for losses will consist either of: reimbursement of 65 percent of the cost of replanting the lost trees; or, the provision of seedlings sufficient to reestablish the stand, at the Secretary's discretion. The program will be administered by USDA's Agricultural Stabilization and Conservation Service (ASCS).

New Food Labeling Legislation in Congress

Legislation proposed in both the House and Senate would require that most food for human consumption

for sale be labeled with certain nutrition information, including serving size, number of servings per container, the amounts of cholesterol, sodium, total carbohydrates, complex carbohydrates, sugar, total protein, dietary fiber contained in each serving, and the number of calories and calories derived from total fat and from saturated and unsaturated fats. The bill (titled the "Nutritional Labeling and Education Act of 1989"), sponsored by Sen. Howard M. Metzenbaum (Ohio) and Rep. Henry A. Waxman (California), would require information to be presented as the average nutritional value for each type of fruit and vegetable available for sale, and displayed at a single location within the store.

Environmental Protection Agency To Lower Alar Tolerance Level

The EPA has announced a gradual phasedown of alar tolerance levels before the agency cancels registration of the chemical growth regulator. Effective November 1, 1989, the tolerance level will be lowered to 5 ppm. A further reduction to 1 ppm is set for 1 year later, with zero tolerance by May 1992.

General Price Outlook

Grower prices for fresh and processed fruit, as measured by USDA's index of grower prices for all fruit, averaged about the same as last year through July 1989. The index increased in 5 of the 7 months, indicating that price levels were generally stronger for the most important commodities in the index (see special article), but significant price declines put downward pressure on the March and July indexes.

The 10-percent drop in March from the previous month was induced by declines in fresh apple, strawberry, and pear prices. Stronger pear and orange prices boosted the index over the next 2 months, but stronger lemon and peach prices failed to offset declining grapefruit, orange, apple, pear, and strawberry prices, resulting in a 20-percent drop in the index

Table 2--Index of annual and quarterly prices received by growers for fresh and processing fruit, 1986-89

Year	Annual	Quarter			
		1st	2nd	3rd	4th
-- 1977=100--					
1986	169	154	161	175	188
1987	181	165	180	177	201
1988	181	161	183	188	192
1989		170	188	1/166	

1/ Two-month average.

Source: Agricultural Prices, NASS, USDA.

between June and July. The index recovered in August, boosted by stronger grapefruit, apple, peach, and strawberry prices. The index may not strengthen much beyond last year's levels with the larger apple crop this fall and good conditions for a larger citrus crop.

Retail prices for fresh fruit fell in June after reaching a seasonal high in May. The Bureau of Labor Statistics (BLS) Consumer Price Index (CPI) for fresh fruit was 150.6 (1982-84=100) in July, down 5 percent from May. Monthly price declines were reported for apples and bananas, but orange

Figure 1

Prices Received by Producers

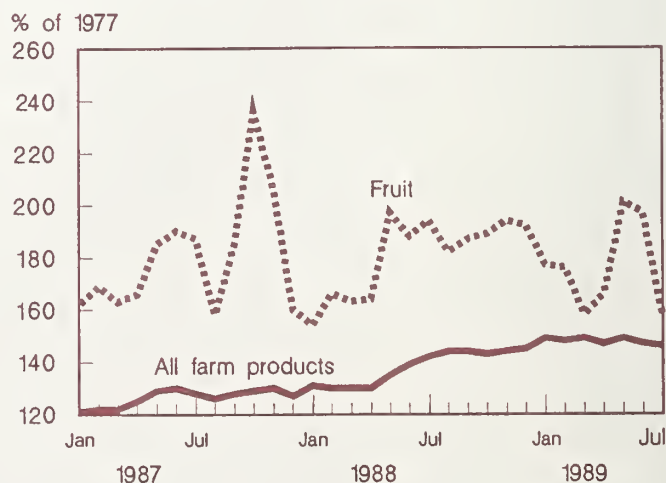


Table 3--Annual and quarterly Consumer Price Indexes for fresh fruit, 1986-89

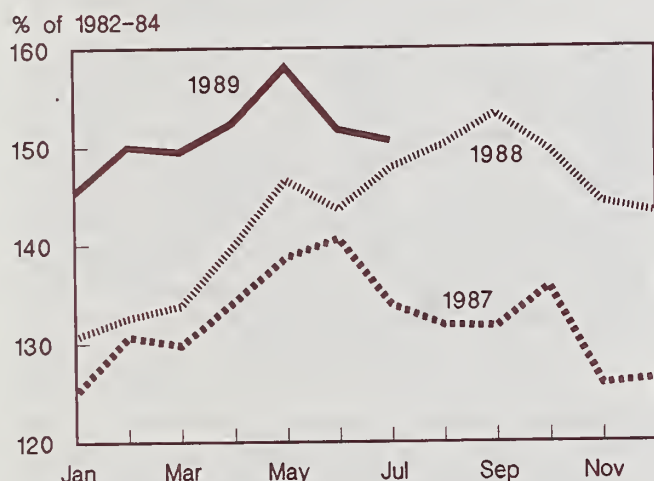
Year	Annual	Quarter			
		1st	2nd	3rd	4th
-- 1982-84=100--					
1986	119	113	121	124	117
1987	132	129	138	132	129
1988	143	132	143	150	146
1989		148	154	1/151	

1/ July's figure only.

Source: Bureau of Labor Statistics,
U.S. Department of Labor.

Figure 2

Fresh Fruit: BLS Consumer Price Index



prices advanced slightly owing to shorter California supplies. The CPI for fresh fruit is likely to remain steady to lower over the next couple of months due to seasonal increases in apple and citrus supplies, and may average less than the 1988 fall.

Retail prices for processed fruit in 1989 have remained slightly above 1988 after taking a small dip in March. The CPI for processed fruit reached its highest level to date in July at 126 (1982-84=100), up 0.3 percent from June and only 2 percent higher than a year ago. In addition to higher retail prices for FCOJ in recent months caused by tight Brazilian orange juice supplies, the July advance was caused by relatively smaller cold storage holdings of many frozen fruits, and lighter carryin supplies of several important canned fruits. Smaller inventories of finished product, combined with potentially short crops and high contract prices for pears, peaches, and tart cherries, should further strengthen prices and keep the index above 1988 for the remainder of the year.

Figure 3

Processed Fruit: BLS Consumer Price Index

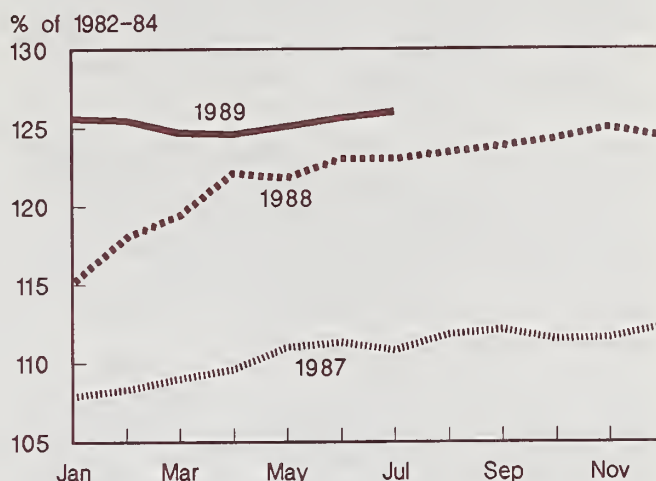


Table 4--Frozen fruit and berries: Cold storage holdings, July 31, 1987-89

Commodity	1987	1988	1989
-- 1,000 pounds--			
FRUIT:			
Apples	53,476	54,452	49,264
Apricots	12,887	12,691	10,389
Cherries	233,472	211,393	167,318
Grapes	849	1,804	1,737
Peaches	27,276	45,995	47,262
BERRIES:			
Blackberries	25,132	18,929	16,046
Blueberries	34,742	25,767	30,028
Boysenberries	6,585	6,224	5,470
Raspberries, red	60,261	47,981	54,757
Strawberries	330,426	355,539	258,904
Other fruit and berries	90,233	92,340	89,615
Total	875,339	873,115	730,790

Source: Cold Storage, NASS, USDA.

General Trade Situation

The strong U.S. and foreign economies continue to stimulate fruit and tree nut demand and trade in 1989, and U.S. imports and exports of fresh and processed fruits and tree nuts continue to expand. Changes in the value of the dollar against the currencies of major trading partners into 1989 have favored U.S. exports to several expanding markets, including Taiwan and Hong Kong, but have been less favorable for exports to Canada, Japan, New Zealand, and the United Kingdom, for example. At the same time, a weaker dollar against the currencies of Chile and Brazil has also reduced the competitiveness of products from these countries in U.S. markets (table 1).

The total value of U.S. exports of fresh and processed fruit products to all destinations except Canada for which U.S. export data are significantly understated, reached \$1 billion

during the first 6 months of 1989, up 1 percent from the same period last year. The total U.S. export value of fresh citrus fruit, canned fruits, juice, and wine through June climbed 10 percent from last year to \$513 million, offsetting a 7-percent lower total value of fresh noncitrus fruit, dried and frozen fruit, and tree nuts.

U.S. fruit and tree nut exports have been enhanced over the past several years by export promotion assistance provided through the Targeted Export Assistance Program (TEA), established by the 1985 farm act. TEA allocations are provided for those U.S. commodities facing world market competition derived from unfair trading practices, such as producer and export subsidies of other countries.

TEA allocations for fruit and tree nut commodities in fiscal 1990 total \$80.1 million, 8 percent above fiscal 1989. The fiscal 1990 allocations for fruits and tree nuts represent 40 percent of the total program allocations, and include promotion expenditures for: canned and frozen cling peaches and fruit cocktail; fresh kiwifruit; prunes; raisins; fresh and frozen strawberries; fresh table grapes and Concord and Niagara grape products; plums, peaches, nectarines and bartlett pears; fresh sweet cherries and processed tart cherries; fresh and processed citrus; fresh apples; fresh pears; grape wine; raw and roasted pistachios; shelled and in-shell walnuts; and, processed and natural almonds.

The total value of U.S. fresh and processed fruit imports was \$2 billion between January and June 1989, almost 5 percent below a year ago, owing to a decline in the value of fresh and canned fruits, juice, and wine imports which offset the increased import value of dried and frozen fruits, and tree nuts.

The decline in fresh fruit imports is partially the result of the Chilean grape scare in March, which detained U.S. imports of all Chilean fruit for inspection while officials checked for cyanide or evidence of other tampering. The total value of imported fruit juice through June was down from last year

Table 5--U.S. noncitrus fruit: Total production, 1987, 1988, and indicated 1989

Commodity	1987	1988	1989
--1,000 short tons--			
Apples	5,374	4,579	4,866
Apricots	115	102	118
Cherries, sweet	215	186	183
Cherries, tart	179	118	132
Cranberries	166	204	196
Grapes	5,264	5,986	5,891
Nectarines	191	200	190
Peaches	1,195	1,310	1,138
Pears	940	861	837
Plums and prunes	979	750	849
Total	14,619	14,296	14,399

Source: Crop Production, NASS, USDA.

Trade Issues

EC to Lower Subsidy Levels for Canned Peaches and Pears

The EC has lowered subsidies for canned peaches and pears in 1989/90 to levels that are in compliance with the 1985 U.S.-EC Canned Fruit Agreement (see text for new levels). The EC also adopted legislation specifying that future subsidies will be set each year so that the EC processor's net cost of fruit (the minimum grower price less the subsidy), will be no less than the world trade-weighted price for the fresh fruit. In response, the U.S. terminated the Section 301 investigation on EC canned fruit.

Country-Of-Origin Ruling for Fruit Juice

On July 13, 1989, the Customs Service announced the final ruling on the application of country-of-origin marking requirements for imported fruit juice concentrates other than orange juice. The rule permits processors to continue marking containers with only the major foreign supplier, but also permits processors to list up to 10 countries to account for at least 75 percent of the total foreign concentrate used. Also, the sources listed on a juice container must now disclose the actual

sources used in that lot, and not sources used as representative of a past importing period. The effective dates for the new requirements for most juice containers (for example, metal cans with paper labels, glass and plastic containers, and paperboard containers) are November 30, 1989, and March 1, 1990, for composite cans (containers with metal ends and paper bodies).

EC To Curb Apple Production

The EC announced that the basic price for apples will be lowered if withdrawals in a given marketing year exceed a set threshold. The threshold price will be gradually lowered from 6 to 3 percent between 1989/90 and 1991/92. The EC is also considering compensation for growers for removing excess trees from production.

Chilean Fruit Sector To Receive Compensation

The Chilean Government will be providing about \$50 million in compensation to the domestic fruit sector for losses sustained from fruit destruction and interrupted trade flows caused by the cyanide scare on Chilean grapes this past March.

because of significantly curtailed imports of Brazilian FCOJ as stocks in that country became tight. Lower FCOJ imports more than offset a doubling in the value of U.S. apple juice imports through June.

Noncitrus

Apples

Production Forecasts Mixed Between Regions

As of August 1, the 1989 U.S. apple crop was forecast at 9.73 billion pounds, 6 percent above a year earlier, but 9 percent below 1987's 10.7-billion-pound record crop. The August forecast is up only slightly from the July forecast of 9.69 billion pounds.

Apple production in the Eastern States is forecast at 2.62 billion pounds, 12 percent less than last year. The lower forecast reflects the heavy impact of widespread rains through much of the spring and summer months, which resulted in disease and reduced fruit quality in Virginia and the New England States. Spring frosts and poor bloom also affected production throughout Pennsylvania, West Virginia, and Virginia. Increased production prospects in western New York and North Carolina should help offset the expected shortfalls in Pennsylvania, Virginia, West Virginia, and the New England States.

The apple crop is progressing nicely in the Central States, where production is forecast at 1.48 billion pounds, up 20 percent from 1988's drought-reduced crop. Adequate rainfall and mild temperatures have helped fruit size and quality throughout the region. Production in Michigan is forecast at 1 billion pounds, 17 percent higher than the 1988 crop and about even with 1987 production. Indiana is forecast to harvest a crop about 20 percent larger than last year's, at 67 million pounds. Although the Ohio apple crop is projected to be somewhat shorter than normal, at 125 million pounds, orchards generally are in better than expected condition considering last year's drought.

The 5.63-billion-pound production forecast for the Western States is 14 percent larger than production last year. Washington apple production in 1989 is estimated at 4.5 billion pounds, up 13 percent from 1988, but below 1987 production by 590 million pounds. California's estimated 1989 crop, at 650 million pounds, is level with that in 1987, but 3 percent larger than 1988 production. Oregon's apple crop is expected to rise 12 percent from 1988 to 185 million pounds, but remain 12 percent below 1987 production. Similarly, Idaho production, forecast at 145 million pounds for 1989, is 7 percent below the 1987 crop, but 7 percent above the 1988 harvest.

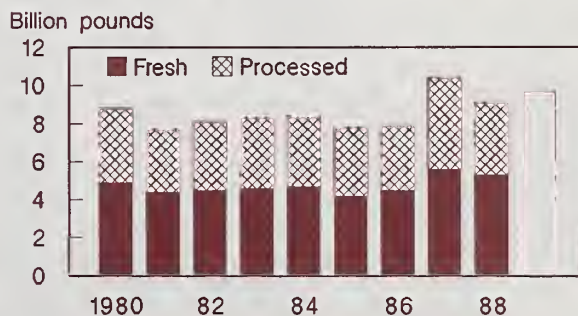
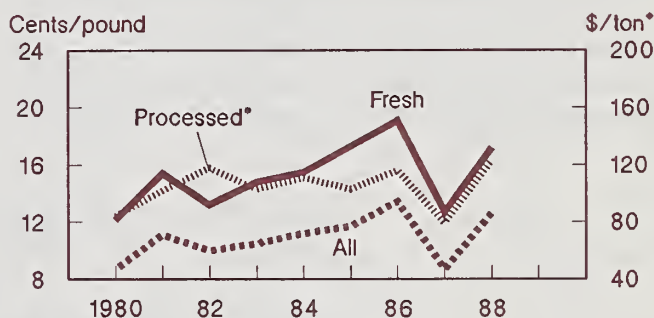
Lower total apple production in 1988 resulted in lighter fresh market shipments, smaller processing use, and higher average grower prices during the 1988/89 marketing season than in 1987/88. The 1988/89 season-average price received by growers for all apples rebounded to 12.6 cents per pound from 1987/88's low of 8.7 cents, due primarily to the recovery of grower prices for processing apples.

Fresh Prices Recovering After Alar Scare

Fresh apple shipments during 1988/89 (July/June) were almost 3.5 billion pounds, 6.6 percent less than a year earlier. Average grower prices for fresh apples gained 4.5 cents per pound from 1987/88 to 17.2 cents in 1988/89. The 1988/89 season-average price likely would have been higher had consumer demand not been curtailed this spring due to concerns about consuming apples treated with Alar, a chemical growth regulator. Fresh apple shipments dropped 17 per-

Figure 4

U.S. Apples: Prices and Production



Season-average grower prices. 1989 indicated total production.

Table 6--Apples: Regional production 1987, 1988, and indicated 1989

Area	1987	1988	1989
--Billion pounds--			
East	2.95	2.98	2.62
Central	1.58	1.24	1.48
West	6.22	4.95	5.63
Total 1/	10.75	9.17	9.73

1/ Some figures may not add to total due to rounding.

Source: Crop Production, NASS, USDA.

cent between February and March 1989, and an additional 7 percent between March and April, after media coverage of the Alar issue first began during the last week in February. The monthly average grower price for fresh apples correspondingly dropped from 18.0 cents a pound in February to 16.6 cents in March and 14.4 cents in April.

Because of the slower movement and lower prices for fresh apples, cold storage inventories on June 30, 1989, were 347.3 million pounds, 40 percent higher than a year earlier. On July 7, USDA announced an apple assistance program aimed at depleting stocks before the 1989/90 harvest. The program provided \$15 million to cover the cost of removing surplus apples from storage. As of August 6, USDA had awarded \$9.5 million to growers in compensation for the removal of 57.5 million pounds of fresh apples from storage at prices ranging from \$4.97 to \$8.20 for 40-pound cartons, and \$9.45 to \$16.50 for 100-pound bulk bins. The apples are to be distributed in 56 non-traditional market outlets, including ethanol distilleries and livestock feeders in Connecticut, New York, Maine, Pennsylvania, Utah, and Washington State. Heading into the 1989/90 harvest, cold storage stocks on July 31 totaled 174.9 million pounds, 84 percent above a year earlier.

Processing Prices Strong

Growers received an average \$123 per ton for processing apples in 1988/89, up 55 percent from the previous season. About 42 percent of the total 1988/89 apple crop of 9.1 billion pounds was processed, down 4 percent from the previous season.

From data collected in its annual survey of cooperating apple processors, the International Apple Institute (IAI) estimated 1989 apple utilization for processing at 97.5 million 42-pound bushels, 65 percent more than last year. The estimate represents 42 percent of the forecast 1989 apple crop, about the same as used for processing last year. Juicing and can-

ning are estimated to account for 84 percent of total processed apple utilization this year, the same as in 1988.

The 1989 IAI estimate reflects the inventory positions reported by survey respondents and expected raw product availability in the Eastern, Central, and Western States. Relatively high finished product inventories and this year's short crop expectations in the East, will slightly dampen processor demand in some areas of the region, but larger crop prospects in western New York may help offset lower volume in the Appalachia region.

The IAI further reports that Eastern processors may reduce use for juice and sauce as much as 20 percent, and that total apple use for processing in the region will probably be 5-10 percent less than last year. Conversely, processing use will be up in the Central States, where finished inventories of most apple products appear modest and 1989 crop prospects are generally good. Western State processors will also increase use in 1989 due to generally good current inventory positions and bumper crop expectations. The IAI estimates that target use in the Central and Western States could increase 6-12 percent from last year.

Exports Down Due to Alar Scare, Imports Slightly Up

Higher prices and concerns in some foreign markets about Alar tolerances on U.S. apples curtailed U.S. fresh apple exports during the 1988/89 season (July/June). U.S. fresh apple exports during the season totaled 249,238 metric tons, down 15 percent from a year earlier.

Exports to Taiwan, the largest market for U.S. fresh apples, dropped off suddenly as Taiwanese importers cancelled orders in response to consumer concerns over Alar. For the 1988/89 season, U.S. fresh apple exports to Taiwan totaled only 46,040 metric tons, down 37 percent from exports last

Table 7--Apples for processing: Utilization by product, 1984-1989 1/

Products	1984	1985	1986	1987	1988	1989
--1,000 bushels-- 2/						
Canning:						
Sauce	20,250	21,520	20,770	23,225	24,980	22,100
Slices	3,600	3,850	3,650	3,750	4,100	4,200
Other	4,167	4,520	3,651	3,730	4,232	4,200
Subtotal	28,017	29,890	28,071	30,705	33,312	30,500
Juicing	44,912	43,860	39,260	69,638	43,288	51,500
Drying	6,871	5,771	4,748	6,757	6,786	6,800
Freezing	4,717	4,626	6,126	5,924	6,564	7,000
Other 3/	2,436	1,760	2,164	1,743	1,588	1,700
Total	86,953	85,907	80,369	114,767	91,538	97,500

1/ 1989 estimate derived from annual survey reports provided by 25 processors representing a substantial portion of the total market.

2/ 42-pound bushels.

3/ Includes baby food, apple butter, vinegar, etc.

Source: Data compiled for the 1989 Apple Marketing Clinic, Chicago, IL., August 16-17, 1989, International Apple Institute, McLean, VA.

season. Alar concerns also disrupted fresh apple exports to Thailand, who earlier this year increased market access for U.S. apples by significantly lowering import duties from 60 to 10 percent (about \$2.26 per 42-pound box).

U.S. exports to Hong Kong and Saudi Arabia were also down from last season, by 32 and 42 percent, respectively. On the other hand, U.S. exports to the United Kingdom surpassed last season, at 18,300 metric tons, despite a bumper harvest in the EC. Similarly, U.S. export data for Canada, although believed understated, indicate that U.S. exports to that country were up over 25 percent from 1987/88 even with the finalization of antidumping measures against U.S. fresh, whole, Red and Golden Delicious exports in Canada earlier this year.

U.S. fresh apple exports may recover in 1989/90 if exporters are able to ease the fears of foreign consumers concerning Alar. Increased promotion via the TEA program may help. The TEA allocation for fresh apples in fiscal 1990 was budgeted at \$3.8 million, \$95,000 more than in fiscal 1989.

U.S. fresh apple imports totaled 116,135 metric tons during 1988/89, 4-percent below the 1987/88 season. For the second consecutive year, U.S. apple imports from New Zealand and Chile fell, 20 and 29 percent, respectively, in 1989 while imports from Canada rose significantly, at 16 percent. The relatively large drop in Chilean exports to the United States was fueled by the detention of all imports of Chilean fruit pending inspection by FDA and USDA after cyanide was detected in two Chilean grapes imported during March. U.S. fresh apple imports may increase in 1989/90 with the recovery of imports from Chile and relatively higher U.S. prices.

Sweet and Tart Cherries

Sweet Cherry Production Moderately Lower In 1989

Sweet cherry production this year is forecast at 182,950 tons, down almost 2 percent from 1988 and 15 percent from 1987. Harvest is complete in all regions. Smaller harvests were expected in Michigan, Oregon, New York, and Pennsylvania, but frost eliminated any prospects for commercial production in Montana this year.

Quality and disease were problems in some areas. In Michigan, cherry leaf spot plagued some growers, and New York growers were reported having difficulty controlling brown rot earlier in the season. Oregon growers experienced some fruit damage caused by rain splitting. On the other hand, Washington growers were expected to harvest a 26-percent larger crop than in 1988, at 78,000 tons. California production was also forecast up 38 percent from last year, at 27,000 tons. Fruit quality was good in both States, but size was generally smaller than normal in Washington.

Fresh Market Shipments Heavy, Processing Demand Likely Soft

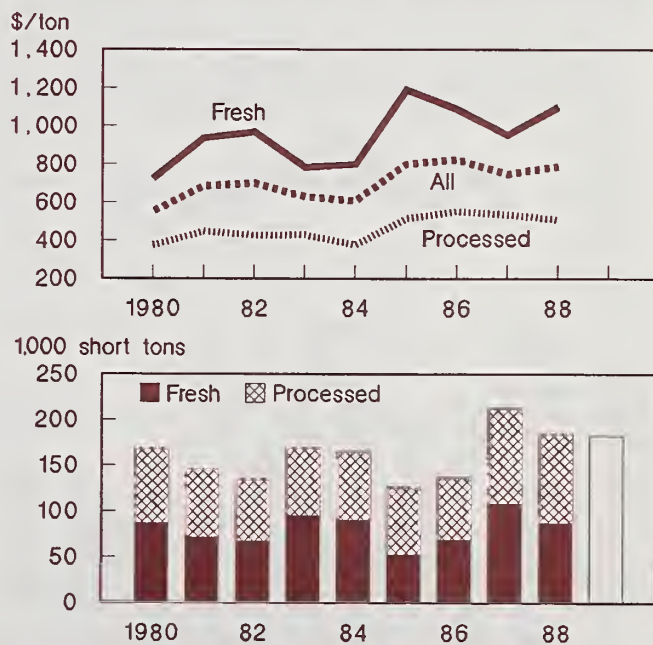
Fresh sweet cherry shipments through July were running 22 percent above last year and trading throughout the past 3 months has been active. Average grower prices for fresh market sweet cherries likely surpassed last year's season average of 55 cents a pound. During early July, Washington State bings were reported selling at \$12 f.o.b. for 20-pound lug, or 60 cents per pound.

Heavy fresh market demand and strong prices, as well as large stocks of canned and frozen sweet cherries, are likely to keep processing demand soft this year. Total supplies of canned sweet cherries during the 1988/89 season (June/May) reached 590,000 cases (basis 24 No. 2-1/2's), the largest in 4 years. Brisk movement through the season left 158,000 cases on hand entering 1989/90, 5 percent more than the 1988/89 carryin, and 65 percent more than the 1987/88 carryin.

Similarly, heading into the 1989/90 season beginning on July 1, cold storage stocks of frozen sweet cherries were 15.6 million pounds, almost double a year earlier. Movement in the 1988/89 season was 9.7 million pounds, 54 percent less than in the previous season. The season-average grower price for processed sweet cherries this year will likely be below last year's \$509 per ton due to lighter demand.

Figure 5

U.S. Sweet Cherries: Prices and Production



Season-average grower prices. 1989 indicated total production.

Tart Cherry Harvest Short of Expectations in 1989

USDA's August 1 forecast for total tart cherry production in 1989 is 263.7 million pounds. With harvest complete, industry sources indicate that utilized production will range between 225 and 235 million pounds, 11 to 15 percent below the USDA total production forecast, due to a poor growing season. USDA will release final production and utilization numbers in January 1990.

The quality of tart cherries harvested this year varied considerably among production areas. Because of the short crop expectations, growers were reported harvesting even poor quality fruit in some areas for diversion into processing uses where quality and color are less critical. USDA's Market News Service reported that almost 171 million pounds of fresh tart cherries had been shipped to processors by growers in Michigan, Wisconsin, Pennsylvania, and New York as of the first week in August.

Moderate carryin and pack kept total supplies of canned tart cherries at an acceptable level for the 1988/89 season (July/June). Total supplies of canned tart cherries during the season were 475,000 cases (basis 24 No. 2-1/2's), 8 percent less than in 1987/88. However, relatively lighter season shipments of 408,000 cases, compared with 1987/88's 472,000 cases, resulted in a 1989/90 carryin of 67,000 cases, slightly higher than last season.

Cold storage stocks of frozen tart cherries were also adequate heading into the 1989/90 season. June 30 stocks were

56.6 million pounds, down 27 percent from a year earlier. Short supplies of the higher quality tart cherries needed for freezing and lower current stocks of frozen tart cherries may boost grower prices well above last season's average of 22.5 cents a pound.

Grapes

Smaller Crop Forecast

The August 1 forecast for all U.S. grape production was 5.89 million short tons, 2 percent below last season's bumper crop, but 12 percent above the 1987/88 crop. If realized, the crop will be the third largest of the past two decades.

In general, California's grape crop is in very good condition and of high quality. Although the average cluster count is down slightly, the clusters are full with large berries. The forecast for California raisin-type grapes is 2.6 million tons, up 2 percent from 1988, while production of California wine-type grapes is expected to be down 6 percent, and table-type grapes down 7 percent.

Raisin production could increase sharply this year as a relatively higher proportion of the larger crop of raisin-type grapes likely will be dried. The larger crop in part reflects the fact that no acreage was put into the Raisin Industry Diversion program this year. In addition, the drying ratio is expected to improve from last year's 4.99 pounds of grapes per pound of raisins, to nearer the 4.26 pounds in 1986, and 4.02 pounds in 1987. Even though domestic and export markets are expected to remain strong, larger raisin production likely will result in a relatively large allocation to the reserve program under the marketing order provisions.

In Washington, the second leading grape-producing State, production was forecast up 26 percent. Growers of concord

Figure 6

U.S. Tart Cherries: Prices and Production

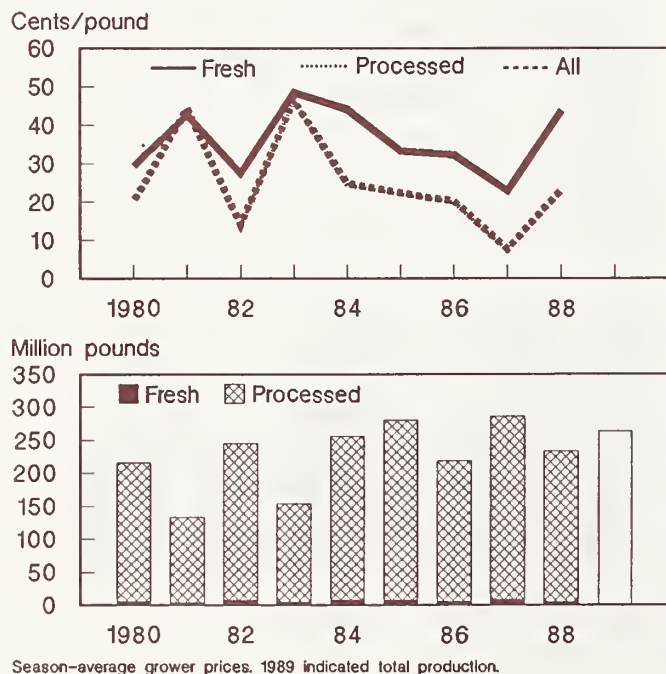
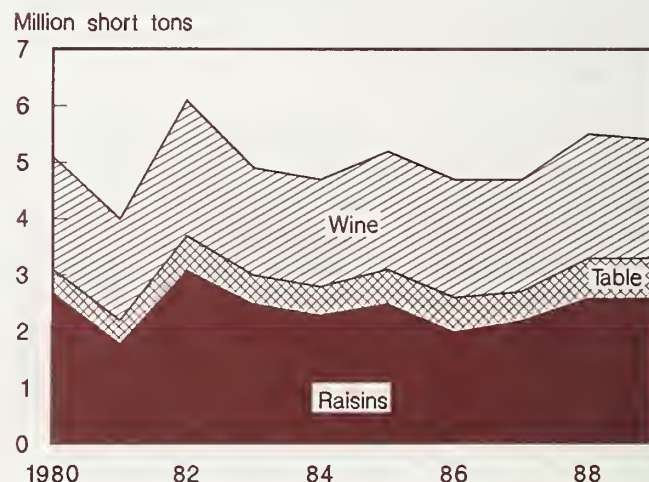


Figure 7

California Grape Production



grapes in the Yakima Valley escaped frost this spring for the first time in 31 years. July weather was ideal for berry sizing and cluster counts are high. The February cold spell kept wine grape prospects about average.

Significant outbreaks of disease in Michigan reduced the crop forecast 6 percent below 1988. Cold spring weather delayed crop development and harvest. The New York grape crop, mostly used for processing, was projected down only 1 percent despite above-normal rains during the spring growing season. Heavy rains made it difficult to complete trimming, tying, and spraying on schedule, but disease problems experienced earlier were alleviated with somewhat drier weather this summer.

Fresh Grape Imports from Chile Decline

Imports of Chilean grapes have increased the seasonal availability of fresh table grapes for U.S. consumers. The Chilean season begins in December and finishes in May (figure 8). In 1989, the United States imported relatively few Chilean grapes once production got underway in May in California's Coachella Valley. Fresh grape imports from Mexico compete directly with the early U.S. crop.

For the year ending May 30, fresh grape imports from Chile were off over 4 percent from the previous year, reflecting both lower shipments early in the season and the cyanide crisis. Shipments data indicate that Chilean imports were running below the year before from January 1989 to the discovery of cyanide on two Chilean grapes in early March.

The cyanide crisis greatly altered the pattern of Chilean imports into the United States this year. Shipments for the week beginning March 12 were less than one-fourth the amount for the same week last year. For the 3 weeks following the cyanide scare, shipments were less than half the year before. By the week of April 2, Chilean shipments recovered

and rose sharply above the year before. For the season, total grape imports from Chile were down about 7 percent.

The cyanide incident will not destroy the Chilean grape industry. The industry will receive about \$50 million from the Government of Chile for fruit destroyed because of the incident. The prompt action on the part of the Chilean Government and the U.S. Food and Drug Administration to restore imports from Chile greatly reduced the economic impact on the Chilean fruit industry. Chile is still looking to a 70-percent increase in fruit production and exports by 1992.

Fresh grape shipments from Mexico this season (mostly in June and July), were 25 percent lower than last season. Mexican table grape exports to the United States compete more directly with U.S. production than imports from Chile because they enter during the U.S. harvest season.

Imports of Grape Juice and Raisins Remain Strong

Imports of grape juice from Argentina, the major U.S. supplier, jumped sharply the first 6 months of 1989 compared to the same period last year. Imports from Argentina reached 22,432 kiloliters (kl), accounting for 73 percent of total U.S. grape juice imports. Grape juice imports from Brazil rose 69 percent to 6,545 kl. Raisin imports for the 1988/89 marketing season between August and June, were up over 17 percent from a year earlier.

Exports of Fresh Grapes and Grape Wine Show Strength

In 1988 U.S. fresh grape exports equaled almost 20 percent of fresh grape use. Exports reached 138,188 metric tons for the 1988/89 season (June/May), up 24 percent from the previous season. U.S. export data indicate that exports to Canada, the major foreign market for U.S. fresh grapes, were up almost 14 percent. Exports to Hong Kong almost doubled, increasing the same absolute amount as to Canada.

Figure 8
U.S. Shipments of Table Grapes, 1988

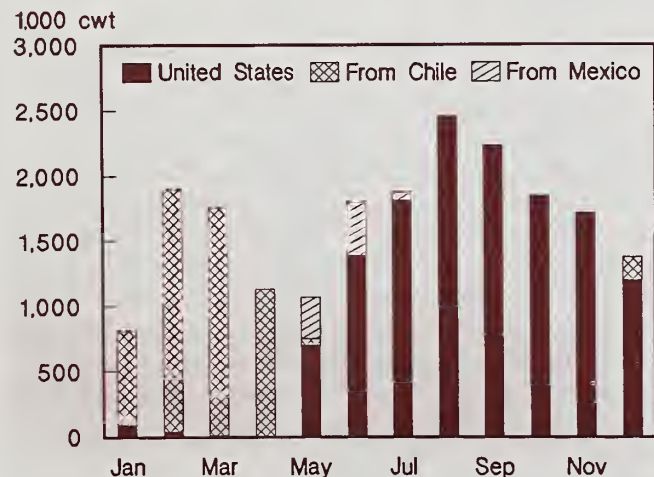
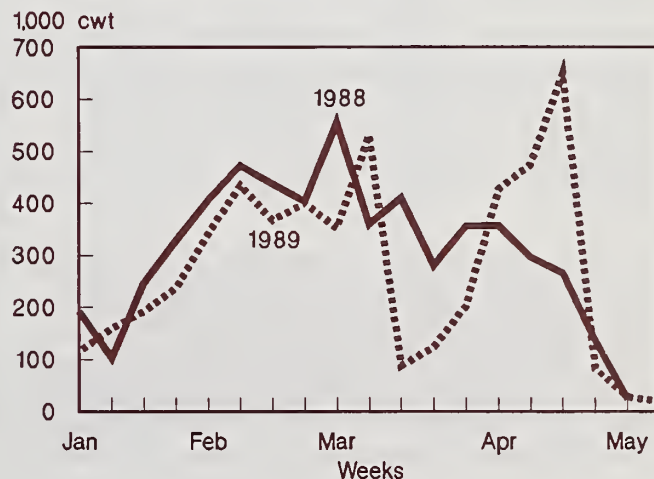


Figure 9
Table Grape Shipments from Chile



Wine exports through June at 35 million liters, were running ahead of last year by 24 percent. Three markets—Canada, the EC, and Japan—accounted for almost 75 percent of the total, each taking almost equal amounts. Exports to Canada increased 30 percent, partly reflecting the improved access to the Canadian market following the implementation of the U.S.-Canadian Free Trade Agreement on January 1, 1989.

Wine exports to Japan jumped 25 percent from last year for the first 6 months of 1989, continuing a strong upward trend beginning in 1982. Wine exports to Japan grew from 0.75 million liters in 1982 to 4.78 million in 1987 and 7.64 million in 1988. Japan remains a large potential market for U.S. wine exports since per capita consumption is far less than in the United States and Europe, and is sharply increasing.

In 1988, the United States became the second leading exporter of wine to Hong Kong, replacing Australia. France remained the number one supplier. The weakening of the U.S. dollar against the Australian and Hong Kong dollars improved the U.S. price position in Hong Kong. This improvement and increased industry promotion in Hong Kong were important factors in the shift.

U.S. raisin exports were up about 1 percent, reaching 83,166 metric tons from August 1988 to May 30, 1989. However, exports to the major EC markets were down. Exports to Japan remained about stable.

Fresh Grape Shipments Up

As of the end of July, domestic fresh grape shipments were over 9 percent ahead of the same period a year ago. This reflects an early harvest with the crop maturing about 2 weeks ahead of normal, and strong demand for the good quality and grape size this season. Demand likely will remain strong as the excellent size and quality of this year's crop have led to increased emphasis and promotion by grape wholesalers and retailers.

Grape Prices Lower But May Rise Later This Season

Early indications are that U.S. wineries were paying slightly higher prices for grapes as this season began compared to the same time a year ago. This probably reflects the smaller crop of wine- and table-type grapes than last year and a likely smaller proportion of raisin-type grapes being crushed for wine.

F.o.b. fresh grape prices at the beginning of the 1989/90 season were substantially below a year ago reflecting heavy shipments. However, f.o.b. prices in June and July were still above 1987. Early maturity of the crop and increased availability of fresh grapes at the onset of the season relative to a year ago, combined with a huge increase in shipments from Chile following the cyanide crisis, may have weakened f.o.b.

Table 8--Nectarines: Acreage, production, yield per acre, California, 1983-89

Year	Bearing acreage	Production	Yield/ acre
	1,000 acres	1,000 short tons	Tons
1983	22.3	185	8.30
1984	24.5	183	7.47
1985	22.4	210	9.38
1986	22.8	172	7.54
1987	23.6	191	8.09
1988	24.2	200	8.26
1989 1/	24.4	190	7.79

1/ Preliminary.

Sources: Noncitrus Fruit and Nuts, Midyear Supplement, August 1989 Crop Production, NASS, USDA, and California Fruit and Nut Acreage.

prices for grapes this season. Continued strong demand for fresh grapes and grape products and prospects for a smaller crop may mean higher prices later this year.

The smaller crop and possible lower season-average price would reduce the total value of the 1989/90 crop. The reduced value and higher production costs portend lower net profits for the industry this year than last.

Nectarines

Short Crop Portends Good Year for California Growers

Despite a short crop, California growers are expecting another good year for nectarines because of heavy demand and higher prices. California production is forecast at 190,000 short tons, 5 percent less than last year's crop due to lower expected yields (table 8). Harvest of early-maturing varieties in the State began in April; two-thirds of the crop had been picked by the latter part of July. Harvest of later maturing varieties is expected to wind down during the first week of September.

Shipments Heavier than 1988, Grower Prices Strong

Early maturity of the nectarine crop resulted in larger shipments than last year at the beginning of the season. Heavy May and June shipments continued in July, outpacing last year's shipments during the same 3 months by 4 percent. Trading throughout the season to date has been brisk and, as fresh market demand has practically outstripped supply, grower prices have been firm. At mid-August, USDA's Market News Service reported f.o.b. shipping point prices in the central and southern Joaquin Valley for selected U.S. 1, well-matured, varieties at \$9-\$10 per 25-pound volume-filled cartons of size 70's, about the same as a year ago. Grower prices are likely to remain strong during the remainder of the season, and will probably surpass last year's average of \$394 per ton.

Peaches

Domestic Peach Crop Short in 1989

Domestic peach supplies are tight in 1989 with production forecast at 2.28 billion pounds, 13 percent below 1988 and the smallest crop in over 4 years (table 9). Production is expected to decline in almost every major peach-producing State except Michigan, with very small increases in Connecticut, Ohio, and Indiana. Excluding California clingstone peaches (used primarily for processing), the crop is forecast at 1.31 billion pounds, down 19 percent from last year.

The August California clingstone crop forecast, at 970 million pounds, is down 4 percent from last season as extra early varieties picked out under expectations. With about one-third of the crop picked by August, quality has been average and fruit size small. The California freestone forecast of 510 million pounds is 2 percent below production last

year. The California harvest is nearing completion and, although quality has been good, fruit size is smaller than average.

Harvesting activities commenced in Michigan by the beginning of August. The Michigan crop is forecast at 55 million pounds, and if realized, will surpass last year by 22 percent. Both quality and fruit size appear excellent. In contrast, production in South Carolina, at 265 million pounds, is expected to be 22 percent less than 1988's 340 million pounds, with harvest nearly complete. Although production in New York is forecast down 11 percent from 1988, much of the early variety crop is of large size and good quality.

Conditions in several other States growing later maturing varieties are mixed. Fruit quality in New Jersey was impaired by frequent spring rains that interfered with spraying activities. Some West Virginia growers have been faced with split pits and short shelf life problems though the fruit have excellent size.

Table 9--Peaches: Total production and season-average prices received by growers, 1987, 1988 and indicated 1989 production

State	Production 1/			Price per pound	
	1987	1988	1989	1987	1988
	--Million pounds--			--Cents--	
Southern States:					
North Carolina	25.0	36.0	15.0	16.8	16.7
South Carolina	350.0	340.0	265.0	14.9	18.5
Georgia	100.0	140.0	125.0	18.1	20.1
Alabama	10.0	24.0	15.0	23.6	20.2
Mississippi	0.5	4.0	1.0	31.0	26.5
Arkansas	1.4	20.0	2.0	28.1	15.0
Louisiana	0.6	6.0	1.5	46.0	32.0
Oklahoma	4.0	26.0	12.0	36.8	24.8
Texas	6.0	18.0	14.0	38.0	35.7
Total	497.5	614.0	450.5		
California:					
Clingstone 2/	920.0	1,015.0	970.0	9.5	10.4
Freestone	511.0	523.0	510.0	13.4	15.2
Total	1,431.0	1,538.0	1,480.0		
Other States:					
Massachusetts	2.0	2.2	2.1	52.0	55.0
Connecticut	2.7	2.7	2.8	52.0	55.0
New York	14.3	14.1	12.5	21.5	27.2
New Jersey	80.0	85.0	65.0	22.7	24.4
Pennsylvania	85.0	85.0	70.0	17.5	19.6
Ohio	9.0	6.0	8.0	28.0	31.0
Indiana	7.5	4.5	5.5	28.9	30.9
Illinois	20.0	20.0	14.0	27.5	24.0
Michigan	60.0	45.0	55.0	16.1	17.8
Missouri	13.0	14.0	6.0	18.7	22.5
Kansas	2.5	4.5	1.8	30.0	37.0
Delaware	0.9	3.1	0.8	18.9	21.3
Maryland	11.0	12.8	7.0	15.4	18.9
Virginia	27.0	29.0	15.0	17.1	14.7
West Virginia	17.0	20.0	8.0	13.4	16.9
Kentucky	9.0	6.0	2.5	24.5	28.0
Tennessee	2.6	11.0	2.5	34.6	29.7
Idaho	11.3	11.8	6.6	16.7	26.0
Colorado	19.0	16.0	(3)	22.4	26.9
Utah	10.5	11.0	6.4	16.0	19.0
Washington	43.0	50.0	40.0	16.5	19.3
Oregon	15.0	14.0	13.0	27.5	28.1
Total	462.3	467.7	344.5		
United States	2,390.8	2,619.7	2,275.0	13.8	15.6

1/ Includes unharvested production and harvested not sold (million pounds): United States, excluding California clingstone, 1987-72.6; 1988-90.7

2/ California clingstone is over the scale tonnage and includes culls and cannery diversion (million pounds): 1987 and 1988-70.0.

3/ No significant production due to frost.

Sources: August 1989 Crop Production and Noncitrus Fruit and Nuts, Midyear Supplement, NASS, USDA.

Fresh Market Conditions Bullish

The average grower price for fresh market peaches midway into the season is strong and advancing due to large early supplies in California which quickly moved, and expectations of short supplies nationwide. Shipments from California began in March, several weeks earlier than usual. Fresh market shipments for the first half of 1989 were running 9 percent ahead of last year, even though June 1989 shipments were 12 percent lighter than during June 1988. In July, industry sources reported California shipments to Eastern markets since March were running about 62 percent heavier than last year, reflecting the production shortfalls in the East and the early California availabilities. Correspondingly, the July average grower price was up 16.4 percent from July 1988, at 22.7 cents per pound. Grower prices for fresh market peaches are likely to remain strong through the remainder of the season in most regions, and are likely to surpass last season's average of 21.3 cents per pound.

Canning and Freezing Demand Heavy, Prices Up

Moderate carryin and pack of canned peaches in 1988/89, combined with heavy shipments, left only 1.8 million cases (24 No. 2-1/2's) in carryover stocks heading into 1989/90. Consequently, demand for canning peaches, particularly clingstones, is heavy this year to rebuild supplies, and deliveries to canners are running well ahead of last year's pace. The Clingstone Peach Advisory Board estimates that 1989 deliveries should reach 509,500 tons, up 2.8 percent from 1988. The Board reported clingstone peach deliveries to can-

ners through August 20 totaled 299,394 tons, compared with 284,984 tons delivered about the same time a year ago.

Because of the small carryin and short crop expectations, grower prices for canning peaches are well above last year. The California Canning Peach Association and canners agreed to a base price for clingstones of \$218 per ton for deliveries up to 8 percent off grade. The 1988/89 base price was \$212.75 per ton.

Reduced canners' demand for freestone peaches has caused this year's price to remain about the same as last year's. The California Freestone Peach Association agreement with canners set the price for Fay Elbertas at the 1988 level of \$156 per ton. However, heavier demand from freezers has resulted in higher prices for freestones sold for freezing purposes. The price agreement reached between the California Freestone Peach Association and freezers was for \$150 per ton for Fay Elbertas, and \$165 per ton for Gems, up \$2 and \$5, respectively, from 1988.

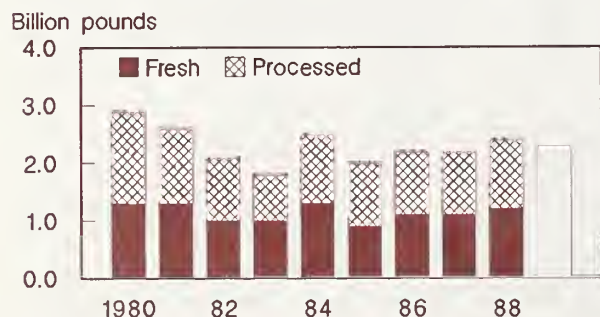
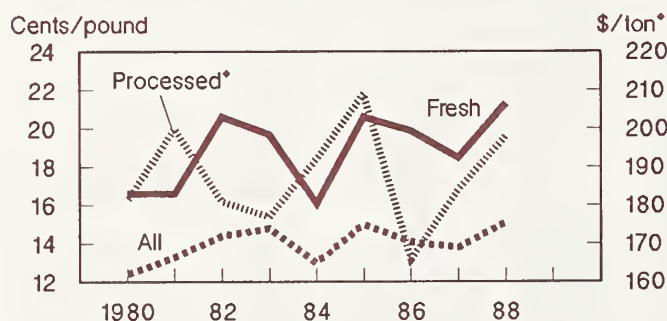
Carryover stocks of frozen peaches on June 30 were 41.4 million pounds, 6.7 percent more than a year earlier, but movement during 1988/89, at 107.7 million pounds, was up 36.4 percent from the preceding season. Frozen peaches were purchased for the school lunch program in 1988 under a USDA pilot program. USDA purchases will continue in 1989 and have been extended to cover frozen peach purchases for serving in schools in all States.

Canned Peach Exports Slow, Imports Up Dramatically

Tighter domestic supplies and increased demand curtailed exports and increased imports of canned peaches throughout the 1988/89 marketing season (June/May). U.S. canned peach exports totaled 17,536 metric tons, down 6 percent from 1987/88. Significant declines in exports to Japan and

Figure 10

U.S. Peaches: Prices and Production

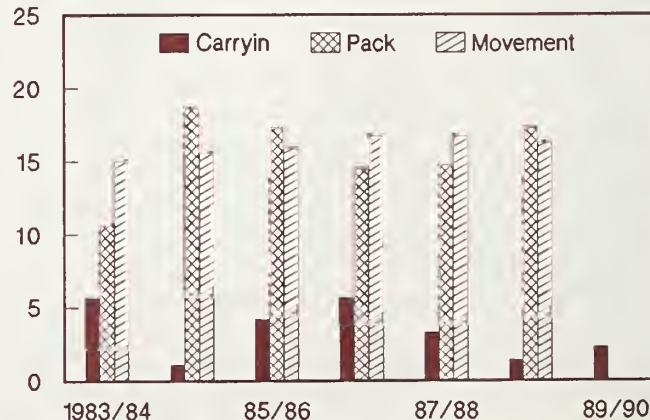


Season-average grower prices. 1989 indicated total production.

Figure 11

Canned Cling Peaches: Carryin, Pack, and Movement

Million cases*



* 24 2-1/2's. Season beginning June 1.

Canada, 9 and 24 percent, respectively, offset a 10-percent increase in exports to Taiwan, and a 2-percent increase in shipments to other smaller foreign markets. Exports are not likely to increase much in 1989/90 with the forecast for continuing short supplies. However, promotional funds for canned and frozen cling peaches and canned fruit cocktail through the TEA program, allocated at \$3.5 million for fiscal 1990, should help maintain foreign markets.

U.S. canned peach imports rose a dramatic 78 percent in 1988/89 to 45,061 metric tons. While imports from Chile rose 66 percent to 9,413 metric tons, imports from the EC, primarily Greece, more than doubled to 32,466 metric tons. The growth in imports from the EC has been fueled in recent years by strong U.S. consumer demand and relatively higher domestic prices. Subsidies paid to EC canners by the Community have helped widen the gap between domestic and EC prices. The subsidies lower raw material costs in the EC relative to those in the United States.

Growth in canned peach imports from the EC is likely to slow in 1989/90 with the recent EC announcement that processing subsidies will be lowered in 1989/90 to levels in full compliance with the 1985 Canned Fruit Agreement. The new subsidy rates of 113.54 ECU (European currency unit) in Italy and Greece, and 94.81 ECU in Spain, raise the net cost of peaches to EC processors to about \$217.03, \$203.01, and \$230.37 per metric ton, respectively, in each country. The new rates represent net peach cost increases of 27 percent in Italy, 40 percent in Greece, and 30 percent in Spain, over 1988/89 levels.

Pears

Prospects Excellent for a Quality 1989/90 Crop

As the 1989 pear harvest got underway, U.S. production was forecast at 837,100 tons, down 3 percent from last year, and 10 percent less than 1987's record crop. Crop conditions are good to excellent in all production regions except New York, where July storms in the Hudson Valley caused some damage. In California, unseasonably cool weather during several weeks this summer resulted in smaller than normal sizes for

bartletts in some areas, but did not impair quality. Later season varieties are sizing up larger in California and in Washington. The crop has been relatively free from disease problems this year, and prospects are for excellent quality in most areas.

Bartlett production in Washington, Oregon, and California is estimated at 485,000 tons, down 4 percent from last year. Production in California, the largest bartlett-producing State, is forecast at 295,000 tons, up 1.4 percent from last year's 291,000, but expected production declines in Washington and Oregon of 8 and 19 percent, respectively, will more than offset the increase in California. The demand for bartletts is primarily for processing. Processed utilization of bartlett pears (mostly for canning), has ranged between 72 and 76 percent of yearly bartlett use since 1986.

Figure 12
U.S. Pears: Prices and Production

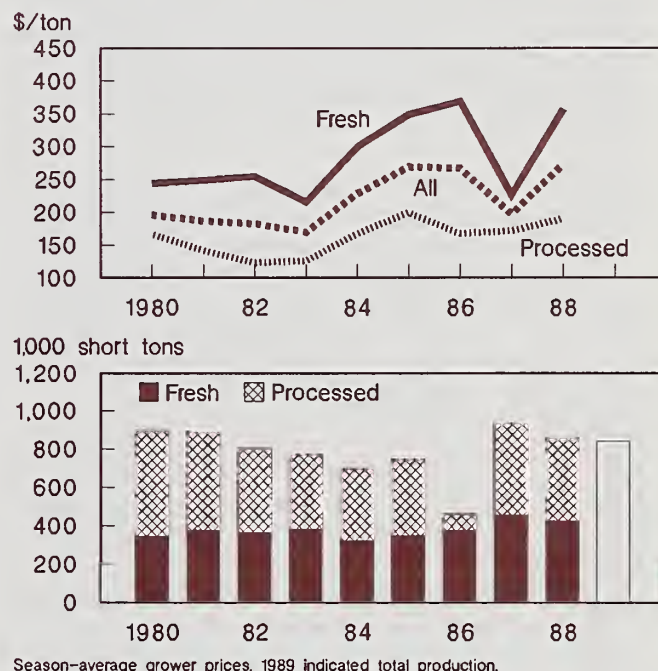


Table 10--West Coast Bartlett pear production, 1985-88 and indicated 1989

State	1985	1986	1987	1988	1989
--1,000 short tons--					
Washington	111	126	171	147	135
Oregon	75	55	78	68	55
California	282	285	325	291	295
Total	468	466	574	506	485

Sources: Noncitrus Fruit and Nuts, Midyear Supplement and August 1989 Crop Production, NASS, USDA.

Production of pears other than bartletts in Washington, Oregon, and California is estimated at 315,000 tons, 1 percent less than last year. Washington is the largest producer, although output in that State is expected to be down 5 percent from 1988's 163,000 tons. Increased California production will keep stocks of pears other than bartletts in the three-State area about even with last year. Pears other than bartletts primarily move into the fresh market. Fresh market use of these other varieties has ranged between 85 and 88 percent of yearly other pear utilization since 1986. Processing utilization is mostly for juice, but small amounts may also be canned or dried.

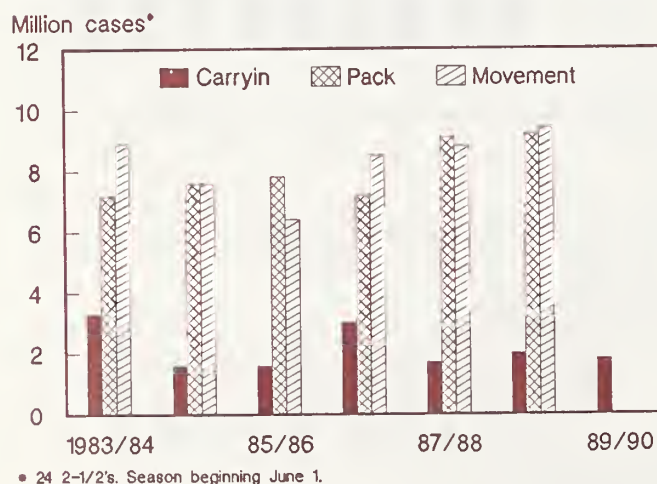
Higher Prices Likely for 1989 Crop

Fresh market pear shipments totaled 388,000 tons during the 1988/89 marketing season, down 4.3 percent from 1987/88. Slower shipments boosted the 1988/89 season-average grower price to \$357 per ton, almost 57 percent greater than the previous season. With 3,200 tons of fresh pears in cold storage on June 30, current indications are for strong fresh market prices in 1989/90. The decline in total bartlett production, combined with heavy demand from canners, should keep fresh bartlett shipments and prices relatively higher, stabilizing market conditions for fall and winter pears.

Brisk canned pear shipments during 1988/89 helped reduce the largest supply of canned pears in 4 years (11.1 million cases, basis 24 No. 2-1/2's), leaving the 1989/90 season carryin at a respectable 1.8 million cases, 9 percent less than last season's carryin. The lower carryin, a forecast smaller crop, and expectations that canning demand for bartletts will remain virtually unchanged from last year, should provide a firm base for grower prices.

Figure 13

Canned Pears: Carryin, Pack, and Movement



Early indications are that 1989/90 grower prices for bartletts for processing (excluding those that were dried), will exceed last season's average of \$207 per ton. The Washington-Oregon Canning Pear Association announced that an agreement has already been reached between growers and five processors in Washington and Oregon for a top price of \$230 per ton to be paid for No. 1 grade pears (2 1/4 inches or larger), and \$184 per ton for No. 2 grade (2 1/8 - 2 1/4 inches). The price quotations are a record in the two-State area, surpassing last season's \$200 per ton and \$150 per ton, for No. 1 and No. 2 pears.

Exports Strong, Imports Moderate

U.S. fresh pear exports totaled 60,802 metric tons for the 1988/89 season (July/June), up 39 percent from 1987/88. Canada remained the largest market, taking 27,477 metric tons during the season, 55 percent greater than the previous season.

Fresh pear exports to Mexico in 1988/89, although relatively small at 11,225 metric tons, were up 242 percent from 1987/88. Mexico is a small, but growing market for fresh deciduous and stone fruit, which is seasonally scarce in Mexican markets. The anti-inflation pact negotiated between the Mexican government, industry, and labor in December 1987 and subsequent extensions, have improved the purchasing power of Mexican consumers and rendered imports more affordable. Mexico is now the third largest market for U.S. fresh pear exports and prospects are good for continued expansion. Export promotion funds through the TEA program, allocated at \$.9 million for fiscal 1990, will also assist in expanding other foreign markets for U.S. fresh pears.

U.S. fresh pear imports, at 40,085 metric tons for 1988/89, were up 22 percent from the season earlier. U.S. imports from Chile increased 20 percent to 20,552 metric tons, accounting for 51 percent of total U.S. imports. U.S. fresh pear imports are likely to remain about the same in 1989/90 if the current outlook for an adequate supply of an excellent quality U.S. crop is realized.

Prospects for expanding U.S. canned pear and mixed fruit exports are favorable in 1989/90 with the EC agreement to lower its processing subsidies for canned pears. The new subsidy rates for 1989/90 of 157.98 ECU in Italy and 86.58 ECU in Spain, raise the net cost of pears for EC processors to about \$179.55 and \$195.58 per metric ton, respectively. The new subsidy rates raise the net cost of pears about 39 percent over the 1988/89 level. The lower EC subsidy rates should improve the competitiveness of U.S. canned pears in world markets.

Plums and Prunes

California plum production is forecast at 200,000 tons this year, 7 percent less than last year. As of mid-August, harvest was over one-half complete. Quality has improved as the season has progressed, and fruit size is normal.

Despite the smaller crop expectations, shipments through July were running about 6 percent ahead of last year's 140,200 tons. Trading is active, and prices are currently about even with last year. In mid-August, the f.o.b. price for casselman plums (size 4/5) in the central and south San Joaquin Valley, was \$10 a 28-pound carton, compared with \$10-\$12 a year ago. As supplies seasonally decline in the fall months, prices are likely to remain strong and the season average-grower price this year is likely to surpass last season's \$475 per ton.

Plum and prune production in Idaho, Michigan, Oregon, and Washington, is forecast at 48,500 tons, down from 52,000 in 1988. Production declines are expected in Oregon and Washington due to weather-related damage, but quality is expected to be good. Production in Idaho is forecast to be unchanged from 1988's 6,500 tons. Although the crop has been affected by hail damage in some areas, little insect or disease damage has been reported. In Michigan, production is expected to climb 27 percent over 1988's drought-reduced crop of 11,000 tons. Harvest began on Japanese varieties in July, and on Stanleys in mid-August.

The California dried prune crop is also forecast at 200,000 tons (dried basis), 29 percent larger than the 1988 crop. With harvest underway, yields are expected to exceed last year's 2.02 tons per acre, and fruit size appears to be average. Prune handlers estimate that 47, 22, and 18 percent of the crop will be in the 50/80-ct., 15/30-ct., and 80/100-ct. size categories, respectively. The Prune Marketing Committee recommended to the Secretary of Agriculture that 100 percent of the marketable portion (not undersized) of the 1989/90 crop be salable tonnage.

Lower production in 1988 helped alleviate the unusually large 1988/89 marketing season (August/July) carryin, and kept total supplies at a manageable level of 224,073 short tons (natural condition), 4 percent less than in 1987/88. The Prune Marketing Committee reported that 1988/89 season industry shipments to domestic and export markets totaled 171,814 short tons, up 3.5 percent from the previous season. Most of the gain was accounted for by heavier domestic pitted prune shipments and government purchases. Larger exports to Australia, New Zealand, and several European countries, including Denmark, France, Italy, Spain, and Greece, helped boost total industry exports to 63,064 short tons in 1988/89, up from 1987/88's 62,943 tons. Exports are likely to get a boost in 1989/90 with an increased TEA allocation, which is set at \$7.5 million in fiscal 1990, up \$1.7 million from fiscal 1989.

Despite the heavier 1988/89 shipments, stocks heading into 1989/90 remained relatively large, and when combined with the expected larger 1989 crop, total supplies may hit 260,000 short tons (natural condition). However, due to strong domestic and foreign markets, and continuing growth in per capita consumption, field prices for the 1989 prune crop remained strong. This year's agreement between the Prune Bargaining Association and major prune packers calls for increased field prices for dried prunes larger than count 82, while prices for smaller sizes and manufacturing prunes will remain unchanged from 1988. The new field price schedule should raise the season average price for California growers over 1988/89's \$735 per ton.

Citrus

USDA's final forecast for total U.S. citrus production in 1988/89 season is 13.1 million short tons, almost 4 percent greater than the 1987/88 citrus crop. The 1988/89 season marks the fourth consecutive season of increased production, reflecting the gradual recovery in Florida and Texas from the early 1980's freezes. Florida citrus production is expected to increase 5 percent from last season to 9.4 million short tons in 1988/89, due to gains in orange, grapefruit, temple, and tangerine production, which offset a minor drop in tangelo production. Similarly, larger orange and grapefruit crops in Texas are expected to result in a citrus crop of 271,000 short tons, 27 percent greater than in 1987/88. Conversely, 1988/89 citrus production may drop 3.4 and 1.5 percent from a year earlier in California and Arizona, respectively, due to smaller expected valencia orange, tangerine, and lemon crops in California, and production shortfalls in all citrus crops except lemons in Arizona.

Production forecasts for the 1989/90 season are not yet available, but preliminary indications are that total U.S. citrus production may continue to expand. Florida reports that most trees are in excellent condition through August, and recent rainfall has been adequate in many areas for growers to discontinue regular irrigation. Fruit sizes are reported as varying in areas affected by a cold snap in late February and early March which caused multiple blooms, but general fruit quality to date looks very good, with little insect damage or wind-scarring problems. Prospects also are good to date for a quality navel orange crop in California. The California Navel Orange Administration Committee reports that the fruit is likely to pack out at larger sizes than last season, is well-shaped, and has minimum scarring and insect damage.

Oranges

Higher Production Weakens Prices

The final U.S. orange production forecast released on July 12, 1989, is for 207 million boxes in 1988/89, up 4 percent from the previous season's 199 million boxes. The production gain is primarily due to larger expected California, Flor-

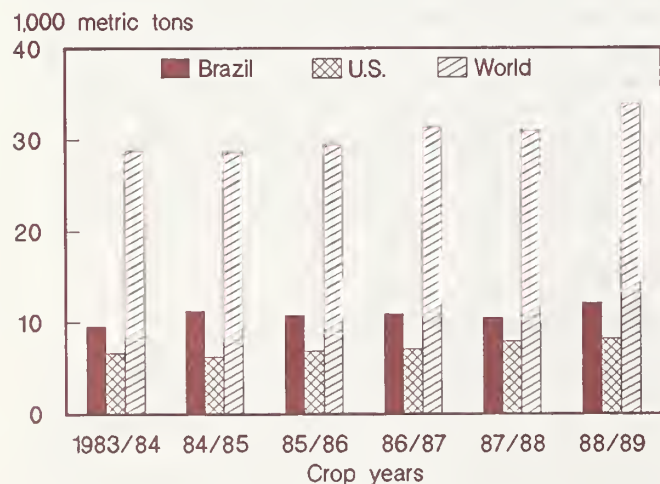
ida, and Texas crops of early, mid-season, and navel oranges, which should offset expected production declines for valencia oranges in Arizona and California. Florida production in 1988/89 is forecast to reach 146.6 million boxes, up 6 percent from the previous season and the largest crop in 6 years. California orange production is estimated at 57 million boxes, down 3 percent from 1987/88 as the projected decline in valencia orange production more than offsets the expected increase in navel orange production, the reverse of last season.

Through mid-August, California and Arizona valencia orange shipments were running slightly behind last season. However, reflecting shorter-crop expectations in 1988/89, the Valencia Orange Administrative Committee reported that 65 percent of expected 1988/89 season production had been shipped by mid-August, compared with only 53 percent a year earlier. Because a large percentage of the crop is of below-average fruit size, shipments to processors this season are outpacing those to fresh domestic and export markets. To date, 38 percent of the combined California and Arizona valencia orange harvest has been shipped to processors, compared with 34 percent to fresh domestic and Canadian markets and 27 percent to other export markets. The movement to processors is up 23 percent from last year, while fresh market shipments are down 4 percent, and exports from the two-State region are off 7 percent.

The heavier movement of valencias to processors has depressed grower on-tree returns for processing utilization, but improved grower returns for fresh market shipments. Overall, on-tree returns for all California and Arizona valencia oranges were \$5.04 a box in July, up 93 cents from the same month last year.

Larger fresh orange supplies kept prices slightly below last season's during most of the 1988/89 season. On-tree returns to growers for all oranges seasonally peaked in May at \$8.52

Figure 14
World Orange Production



a box, 27 cents higher than a year earlier, but then sharply dropped in July to \$5.04 a box, compared with \$6.41 a year earlier. The lower prices are probably attributable to the larger navel orange crop, which carried over into the early harvest season for valencias, depressing prices as valencias moved into the marketplace. Fresh market prices for valencias are ranging higher this year due to the shortage of the larger fruit desired in fresh domestic and export markets. Prices are likely to move higher into early fall before the 1989/90 season gets underway.

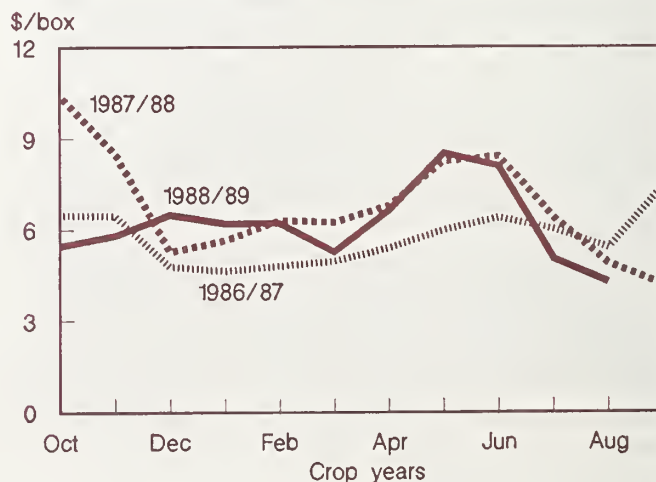
U.S. Exports Strong, Imports Significantly Down

Lower prices and a continuing favorable foreign exchange rate between the U.S. dollar and the currencies of several major importing countries, helped strengthen foreign demand for U.S. fresh oranges. U.S. orange exports between November 1988 and June 1989 totaled 278,758 metric tons, up 9 percent from the same 8 months in the previous season. Shipments were up to all major export markets except Canada, where following a downward trend established over the past several years, exports dropped 5 percent from last season. U.S. exports to Hong Kong during November-June reached 68,795 metric tons, up 24 from a year earlier, and the largest increase in any export market this season to date.

Exports to Japan have slightly slipped this season, owing partly to the shortage of larger-sized valencias that are desired in Japanese markets. Despite the 1988 U.S.-Japan Citrus Agreement that called for annual increases of 22,000 metric tons in the Japanese quota for U.S. fresh orange imports, U.S. exports to Japan have only slightly increased since the accord was reached. As of June, shipments to Japan were up only 4 percent from last season, at 91,464 metric tons.

U.S. fresh orange imports this season are running well behind those in 1987/88 due partly to lower domestic prices.

Figure 15
All Oranges: U.S. Equivalent On-Tree Returns Received by Growers



Between November 1988 and June 1989, U.S. imports totaled 6,350 metric tons, well below the 21,176 metric tons imported during the same period in 1987/88. The decline is also due to a smaller crop in Spain, one of the largest suppliers of fresh oranges and clementines to the U.S. market.

Florida FCOJ Pack Up, Imports Down

The 1988/89 all orange juice yield was forecast at 1.53 gallons per box (42.0 degree Brix), only slightly below last season's record 1.55 gallons. Because of the relatively high yield and larger Florida orange crop, processors packed 174.5 million gallons of FCOJ, 2 percent more than last season. Larger supplies of domestically produced FCOJ have helped curtail imports into Florida during the 1988/89 season. The Florida Citrus Processors Association reported imports into the State were 31 million gallons (42 degree Brix) through August 26, 7 percent less than a year ago. Even with the reduction in imports, it appears that total Florida FCOJ supplies this season will surpass 1987/88's 280.7 million gallons. FCOJ imports from Brazil into other U.S. ports, primarily in New York and New Jersey, are also apparently lower than last season's.

FCOJ movement from Florida was brisk during the early part of the season, but dropped off as buyers completed purchases before Florida f.o.b.(plant) price increases went into effect during May and June. The Florida price increases reflected tightening Brazilian orange juice supplies and expectations that U.S. imports of juice from the current harvest would be delayed. Export prices sharply rose for a small quantity of uncommitted juice available for spot sales. Orange juice supplies meeting U.S. grade requirements from the Brazilian 1989/90 crop are not expected to be available until mid-September. As of August 26, FCOJ movement from Florida totaled 164.4 million gallons, down 0.3 percent from a year ago. Shipments are likely to remain steady as

prices are expected to stay firm for most of the remainder of the season. Despite the brisk movement of FCOJ to date, stocks have remained heavier this season due to the larger carryin and pack.

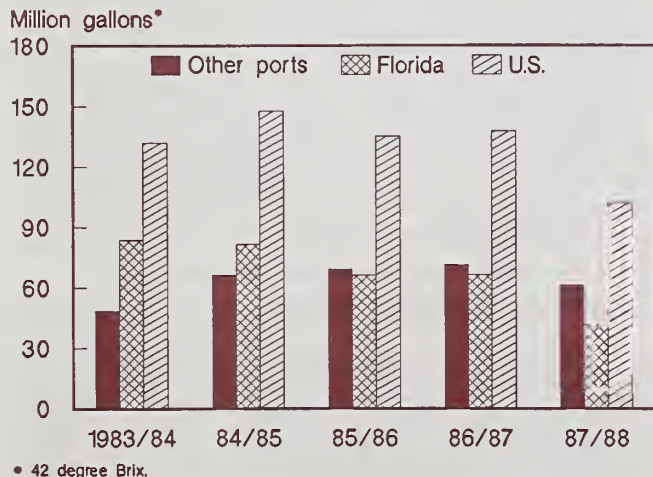
Chilled Orange Juice Pack Up, But Movement Brisk

The chilled orange juice (COJ) pack is also significantly higher this season due to the larger Florida orange crop and higher juice yield. The Florida Citrus Processors Association reported 394.2 million gallons (including fruit, single-strength reprocessed, and FCOJ) had been packed as of August 26, 15 percent more than a year earlier. Increasing domestic consumption and growing demand in Japan have significantly boosted movement to both domestic and export markets this season. Export shipments, primarily to Japan and the EC, reached 3.5 million gallons between October 1, 1988, and August 26, 1989, up 136 percent from a year earlier. During the same period, domestic shipments were 7 percent higher, at 296.3 million gallons. The increase in domestic shipments may have been partially stimulated by a decrease in Brazilian FCOJ imports destined for Midwestern and Northeastern processors who reprocess FCOJ to yield COJ.

Canned Orange Juice Supplies and Movement Higher

Processors are packing more canned orange juice this season because of a 16-percent lighter carryin than in 1987/88. Although shipments are up, the heavier movement to date has not offset the higher pack, and stocks are above a year ago. Through August 26, Florida packers had canned 7.6 million cases of single-strength orange juice (24-2's), up from 6.6 million cases a year earlier. Shipments during the period reached 7.5 million cases, surpassing last year's by 12 percent, leaving stocks only 5 percent higher as of August 26 than stocks on the same date last year. Prices have been steady at \$14.00 a case of 12/46 ounces (sweetened and unsweetened, f.o.b. Florida canneries), compared with \$13.65 a year ago.

Figure 16
U.S. Imports of FCOJ



Brazil Expects Record Crop in 1989/90

Commercial orange production in Sao Paulo, Brazil's largest commercial citrus region, is forecast at a record 265 million boxes in 1989/90 (July/June), 26 percent above 1988/89. Production in the region continues to expand due to higher export prices, which continues to stimulate aggressive tree planting. Harvesting activities began 30-40 days later than usual because of dry weather during July-September 1988, which resulted in a poor first bloom. However, subsequent rainfalls promoted successful follow-up blooms and the trees now appear to be carrying a larger number of oranges of above normal size.

FCOJ production in Sao Paulo during the 1989/90 processing season is forecast at 865,000 metric tons at 65 degree Brix (298.3 million gallons at 42 degree Brix), 26 percent more than last season. The average juice yield is expected to be somewhat lower than 1988/89's near-record level. With the expected production increase and carryin stocks of only 39,000 metric tons, total Brazilian supplies should reach 904,000 metric tons, up 26 percent from last year.

The later harvest may encourage a more rapid export pace, which may have a downward effect on U.S. grower prices heading into the domestic harvest season. However, should larger Florida crop expectations be realized, U.S. demand for Brazilian orange juice may be reduced.

Grapefruit

1988/89 Production Moderately Up

Recovery of the U.S. grapefruit industry has continued for the fifth consecutive year, with Florida and Texas harvesting larger crops that offset small production declines in California and Arizona. The final forecast for the 1988/89 season (September/August) is 69.6 million boxes, 2 percent more than 1987/88, but still below the pre-freeze years.

Florida production is forecast at a record 54.9 million boxes, almost 2 percent above 1987/88. The State has accounted for a constant 79 percent of total U.S. grapefruit production over the past 3 years. Production in Texas is forecast up 26 percent from last season's 3.8 million boxes. Texas has grown from supplying only 3 percent of U.S. grapefruit production in 1986/87 to 7 percent in 1988/89. Conversely, production in California and Arizona continues to decline.

Increased supplies in 1988/89 depressed grower on-tree returns for all grapefruit through April, when a seasonal low

of \$3.28 a box was reached. Since April, prices have gradually recovered with the completion of the Florida harvest, and are likely to remain above the previous two seasons for the remainder of 1988/89. Grower prices ranged higher than last season for fresh Arizona and California grapefruit because of the smaller crops in both States. However, larger harvests in Florida and Texas reduced grower prices in these two States below the previous season.

Foreign Demand Stronger

U.S. exports of fresh grapefruit continue to climb with the weaker dollar and increased foreign market promotional spending through the TEA program. U.S. fresh grapefruit exports totaled 450,767 metric tons between September and June, up 6 percent from a year earlier. Japan remains the largest market, accounting for 53 percent of U.S. exports over the 10-month period. Exports to Canada dipped slightly to 25,138 metric tons, a 26-percent decline from last year because of the less favorable exchange rate between the U.S. and Canadian dollars. U.S. exports to France declined 1 percent to 60,276 metric tons during the 10-month period, but are likely to surpass 1987/88's total of 61,642 metric tons by the end of the season.

The market has expanded considerably for U.S. exports to the Netherlands this season. Fresh grapefruit exports to the Netherlands reached 37,632 metric tons in June, up 49 percent, and the largest percentage increase in any U.S. export market for grapefruit. U.S. total fresh grapefruit exports are likely to continue stronger in 1989/90 with the prospects for a good U.S. crop, declining import barriers in several major importing countries, and increased TEA expenditures.

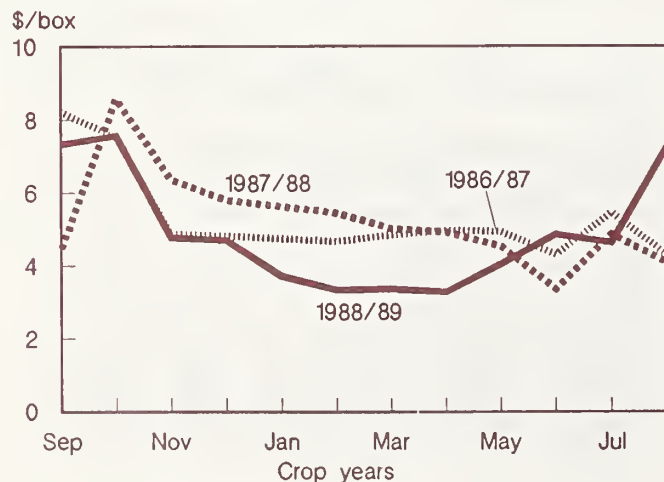
Grapefruit Juice Pack and Movement Up

Florida processors packed 38.6 million gallons of frozen concentrated grapefruit juice (FCGJ) through August 26, 6 percent more than a year ago. The larger pack, combined with significantly higher carryin stocks of almost 9.8 million gallons and only slightly improved shipments, boosted stocks as of August 26 to 21.2 million gallons, well above the 17.1 million gallons on hand 1 year ago. F.o.b. prices have been steady this season at \$16.97 per case of 48/6-ounce size (private brand, Florida canneries), compared with \$18.69 a year ago. Larger inventories and softer export demand are likely to keep prices firm for the remainder of the season. U.S. exports of FCGJ between December 1988 and June 1989, at 31.9 million liters, were 40 percent behind last year. Demand is down this season in all major export markets.

The larger Florida grapefruit crop and continuing strong demand for chilled grapefruit juice (CGJ), contributed to a larger pack this season. Processors packed 35.5 million gallons of CGJ (including single-strength reprocessed) as of

Figure 17

All Grapefruit: U.S. Equivalent On-Tree Returns Received by Growers



August 26, 5 percent more than a year ago. As in past seasons, most of the CGJ processed this year is from FCGJ, but processors also packed 57 percent more CGJ from fresh fruit owing to larger available supplies. To date, the larger pack has not been accompanied by movement brisk enough to significantly lower inventories, and processors were holding 3.9 million gallons as of August 26, 39 percent more than a year ago. Demand this season is running stronger for bulk CGJ, and as of August 26, processors had moved 783,000 gallons in bulk compared with 264,000 gallons last year. Packaged CGJ shipments were off 0.7 percent from a year ago as of August 26.

Stimulated by the lowest carryin in three seasons (October/September), at 2.3 million cases (24-2's), the Florida pack of canned grapefruit juice is ranging higher in 1988/89. As of August 26, Florida processors had packed 7.4 million cases of canned grapefruit juice, 4 percent higher than the same date in 1988, but still well below 1987's 8.6 million cases. Owing to lower f.o.b. prices this season, shipments through August 26 were moving at a fast enough pace to keep inventories well in hand. Inventories on August 26 were 1.5 million cases, 1.1 percent more than a year ago, but still 20 percent less than 2 years ago.

Although small price advances were announced in July, f.o.b. prices for canned grapefruit juice remain lower in 1988/89 than in the previous two seasons. In August, f.o.b. prices were quoted at \$10.25 (12/46 ounce, Florida canneries), compared with \$11.25 a year ago, and \$10.65 2 years ago. Shipments during the remainder of 1988/89 may slow somewhat with the price advances, but processors are likely to end the season holding inventories at about the same level as those at the beginning of the season.

Lemons

The 1988/89 season (August/July) California and Arizona lemon crop is estimated at 20.3 million boxes, down 2 and 29 percent, respectively, from the two preceding seasons. Arizona production, projected at 3.8 million boxes, is up 4 percent from last season, but well below the almost record 1986/87 crop. Conversely, California production was forecast down 3 percent from the previous season, at 16.5 million boxes. The 1987/88 and 1988/89 crops in both States have been adversely affected by poor weather, which has significantly affected yields.

Because of the somewhat similar market needs this season compared with last, shipments ran at almost the same pace through the season. The Lemon Administrative Committee reported that shipments from districts covered under the California and Arizona lemon marketing order for the season reached 20.2 million boxes, compared with 20.7 million

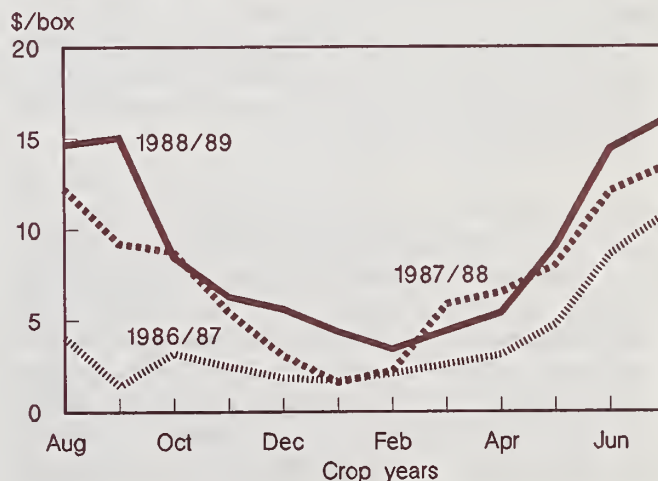
boxes last season. The majority of shipments in 1988/89 were to the fresh market, which accounted for 41 percent of the season total, a 3-percent gain from 1987/88. The gain in fresh market shipments was at the expense of processors, who received 3 percent less of the total shipments than last season, while exports accounted for a steady 20 percent of total shipments during both seasons.

World market demand for fresh lemons continued strong in 1988/89 with only moderate production increases forecast for most of the major lemon-producing countries. Consequently, export market demand for U.S. lemons has remained similar to last season. U.S. exports between August 1988 and July of this year were 3,652 metric tons, compared with 3,716 metric tons last season.

The smaller 1988/89 crop kept grower on-tree returns for all lemons above those during most months of the previous two seasons. The season low of \$3.41 per box was reached in February, well above the season lows of \$1.41 and \$1.59 in 1987/88 and 1988/89, respectively. Similarly, the 1988/89 season high return of \$15.99 per box attained in July was the highest in three seasons. Overall, grower returns for all lemons averaged \$8.93 a box during 1988/89, considerably higher than the 1987/88 average of \$6.86, and 1986/87 average of \$3.55.

One month into the 1989/90 season, fresh market trading is active. Harvest is just beginning in California and early shipments are running lighter than a year ago. Although the 1989/90 crop estimates are not yet available, prices are likely to remain strong into the fall with the limited supply.

Figure 18
All Lemons: U.S. Equivalent On-Tree Returns Received by Growers



Berries

Strawberries

As of June 9, the 1989 strawberry crop in the major producing States is forecast at a record for the second consecutive year. Total 1989 production is forecast at 1.2 billion pounds, slightly up from last year's 1.1 billion pounds. The larger crop is the result of increased early-crop production in Florida, and spring crop production in California. Weather-related damage to the late crop in Oregon and Washington significantly decreased yields and total production in those two States. The early crop in Florida reached 153.7 million pounds, 23 percent larger than production in 1988. The increase was the result of larger acreage harvested and 16 percent better yields, at 29,000 pounds per acre. California production is forecast to increase 8 percent from last year's 862 million pounds, primarily due to expanded acreage harvested.

Conversely, significant production shortfalls were recorded in Washington and Oregon, where freezing weather and extreme cold conditions did major damage to plants. With harvest complete, production in Oregon was only 66 million pounds, down 35 percent from last year, while Washington output dropped 27 percent from 1988 to 16.1 million pounds. Picking was delayed in California because extremely cold weather in January and February caused early blooms to be lost. With the short Washington and Oregon crops, California should account for 90 percent of total spring production this year, compared with 85 percent last year.

Fresh Market Soft, Processing Tight

Fresh market strawberry shipments are lagging well behind last year due to weaker market demand that has kept f.o.b. prices significantly below a year ago, and trading slow. In mid-August, the f.o.b. price for fresh strawberries in the central California coast area was quoted at \$3-\$5 for flats of 12 1-pint trays (medium to large size), compared with \$7 a year earlier. Lower fresh market prices have prompted some diversion of fresh strawberries to processors, where demand is currently tight because of the production shortfalls in Oregon and Washington, smaller cold storage inventories, and a decline in imports from Mexico.

Cold storage inventories on July 31 were 258.9 million pounds, only 73 percent of holdings a year earlier. Deliveries of No.1 strawberries to freezers from the beginning of the season in January through mid-August, were only 225.5 million pounds, down 21 percent from the same period last year, and short from all major production areas. Oregon growers delivered only 58.7 million pounds, 39 percent less than last year, while Washington deliveries were down 75 percent at 4.8 million pounds. California deliveries were running only

Table 11--Strawberry deliveries for freezing, 1988 and 1989

State	1988	1989
--Million pounds--		
California 1/	173.8	165.5
Oregon 2/	96.4	58.7
Washington 2/	19.6	4.8
Total	289.8	229.0

1/ Through August 19.

2/ For the season.

Source: Food Institute Reports.

5 percent behind last year, at 162.1 million pounds. Short supplies significantly boosted f.o.b. prices for frozen strawberries this year. Mid-August f.o.b. price quotes for Northwest 30-pound sliced, were reported firm at 65-69 cents a pound, and 64-65 cents for California product, compared with 48-50 cents and 47-49 cents (cash buyers, f.o.b. plant), respectively, at the same time last year.

Fresh and Frozen Imports Sluggish, Fresh Exports Up

Weaker fresh market demand curtailed U.S. imports of fresh strawberries during the first 6 months of 1989. Fresh strawberry imports between January and June totaled 13,869 metric tons, 5 percent more than last year. Although Mexico continues to be the largest foreign supplier, accounting for more than 90 percent of total U.S. imports through June, Mexican imports have slowed in recent years with growing domestic consumption in that country. Growing fresh market demand in Mexico this year also contributed to a lower frozen strawberry pack in that country during its 1988/89 season (October/September). Lower total available supplies and strong Mexican consumer demand for frozen strawberries reduced exports sharply this year. U.S. imports of frozen strawberries from Mexico during the first 6 months of 1989 totaled 18,500 metric tons, down 18 percent from last year. However, the current short domestic inventory and higher prices for frozen strawberries in the United States may be favorable for increasing imports during the second half of the year.

U.S. exports of fresh strawberries during the first 6 months of 1989 rose 18 percent from the same period in 1988. Exports to Canada, the largest market, continue to climb, at 8,193 metric tons, 11 percent above last year. Exports to Japan and the EC were sluggish in the first half of the year, and are not likely to reach their 1988 total by the end of the year. Larger exports to Hong Kong and Australia may help raise total U.S. fresh strawberry exports above last year's 13,911 metric tons.

Cranberries

1988 Production Up Significantly

Significantly larger yields in all major cranberry-producing States boosted the 1988 cranberry crop to an estimated 4.08 million barrels, up 23 percent from 1987. The average yield for the five States—Massachusetts, New Jersey, Oregon, Washington, and Wisconsin—rose from 130.2 barrels per acre in 1987 to 156.9 barrels in 1988. Production in Massachusetts, the largest State, reached almost 1.9 million barrels, 28 percent more than the previous year. Similarly, Wisconsin production totaled 1.6 million barrels, up from 1.3 million in 1987, owing to a 14-percent increase in yields to 185.7 barrels per acre. Combined production in New Jersey, Oregon, and Washington, at 658,000 barrels in 1988, was up 19 percent from 1987.

Processors took a slightly larger share of the total crop in 1988, 3.7 million barrels, compared with almost 3 million in 1987, while fresh market utilization dropped 7 percent to 275,000 barrels. Despite the significantly larger crop, the average price per barrel increased slightly from 1987's \$44.50, to \$44.90 in 1988 because of 4-percent higher prices received by Massachusetts growers. Grower prices were relatively lower in each of the other States.

1989 Crop Moderately Down

The 1989 cranberry crop is shaping up nicely in all production areas. The crop is forecast at 3.93 million barrels, down only 4 percent from 1988. Conditions in Massachusetts have been generally good to date, with no major frost damage, only light insect damage, and ample water in reservoirs for frost protection and harvesting activities. Berry size is medium to large, with more growth expected. Massachusetts production is forecast at 1.82 million barrels, down 2 percent from the previous year.

The Wisconsin crop is in average to good condition, although the crop is later than normal because of cool spring weather. Wisconsin production is forecast down 6 percent from 1988, at 1.47 million barrels. Despite good growing conditions and average to heavy fruit set, New Jersey will also harvest a smaller crop of 340,000 barrels, down 8 percent from last year's record.

Larger crops are forecast for both Oregon and Washington this year, with Washington projected for the largest increase from last year, 4 percent at 140,000 barrels. The Washington crop suffered minimal damage during the winter. Average to heavy bloom resulted in good fruit set even though bloom was 2 weeks later this year. In Oregon, the crop is estimated at 155,000 barrels, up 1 percent from 1988, owing to limited frost damage early in the year, and excellent growing conditions this spring and summer, which produced good fruit set and size. With harvest expected to begin the last

week in September, growers are reporting some damage from insects, with fireworm populations moderate to high.

Tree Nuts

Record Levels Set In 1988/89

The U.S. supply of all tree nuts (almonds, walnuts, pecans, pistachios, macadamias, and hazelnuts), including domestic and imported commodities, is estimated to have reached a record 1.3 billion pounds for the 1988/89 marketing season. The supply includes the second largest production of domes-

Table 12--Tree nuts: Production, 1987, 1988 and indicated 1989

Crop and State	1987	1988	1989
--1,000 lbs. (kernel weight)--			
Almonds:			
California	660,000	590,000	425,000
--Short tons (in-shell)--			
Walnuts, English:			
California	247,000	206,000	210,000
Hazelnuts:			
United States	21,800	16,500	13,500
--1,000 lbs. (in-shell)--			
Pecans:			
United States	262,200	308,000	(1)
Macadamia nuts:			
Hawaii	42,700	45,500	(2)
Pistachios:			
California	33,100	94,000	(1)

1/ Available September 12, 1989.

2/ Available January, 1990.

Sources: August 1989 Crop Production and Noncitrus Fruit and Nuts, Midyear Supplement, NASS, USDA.

Table 13--Tree nuts in cold storage, June 30, 1987-89

Commodity	1987	1988	1989
--Million pounds--			
Almonds:			
In-shell	0.4	2.9	3.1
Nutmeats	129.9	106.8	137.4
Walnuts, English:			
In-shell	0.6	1.1	3.8
Nutmeats	32.3	81.0	74.9
Hazelnuts:			
In-shell	0.4	1.3	0.1
Nutmeats	1.6	2.5	2.5
Pecans:			
In-shell	47.0	47.8	63.5
Nutmeats	41.8	40.5	38.7
Other tree nuts:			
In-shell	1.8	13.3	1.7
Nutmeats	17.4	12.1	35.0
Total:			
In-shell	50.2	66.4	72.2
Nutmeats	223.0	242.9	288.5

Source: Cold Storage, NASS, USDA.

tically grown tree nuts, near record imports, and record beginning stocks. Strong demand pushed total use during 1988/89 above 1.0 billion pounds for the first time ever. Exports are estimated to have exceeded 440 million pounds and domestic consumption also reached a record 622 million pounds, or 2.51 pounds per capita. Carryover stocks for the upcoming 1989/90 season should be at a reasonable marketing level for trade activities.

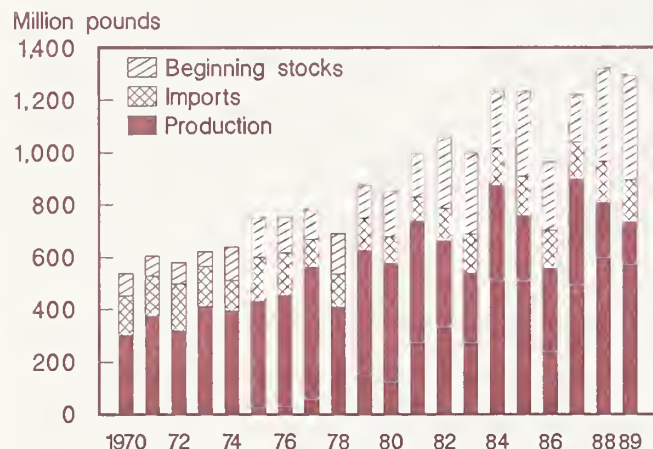
1989/90 Supply and Utilization Slightly Lower

Although U.S. tree nut production in 1989 is expected to be lower, imports and beginning stocks are likely to be higher, causing supplies to be only slightly lower than a year ago.

U.S. tree nut exports in 1989/90 are projected to be slightly smaller than last season's record. However, export market demand is expected to continue strong, especially if the U.S. dollar continues to weaken against foreign currencies. The

Figure 19

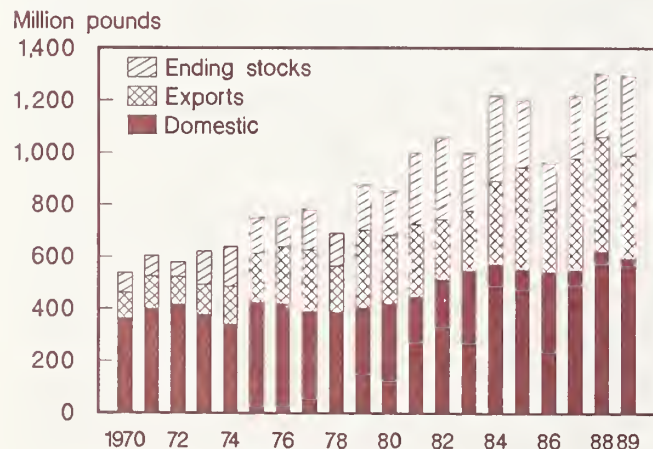
U.S. Tree Nut Supplies



Shelled basis. Production excludes market reserve held out. 1989 estimated.

Figure 20

U.S. Tree Nut Utilization



Shelled basis. 1989 estimated.

domestic market is also expected to be very strong, as consumption should be only slightly lower than last year's record.

Almonds

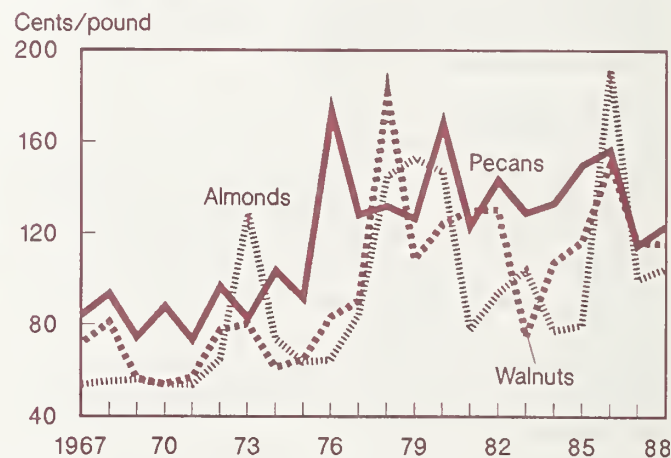
Smaller Crop, Ample Supply

The final forecast for the 1989 California almond crop is 425 million pounds (shelled basis), down 28 percent from last year's 590 million pounds. The 1989 crop will be harvested from an estimated 402,000 bearing acres and should yield 1,057 pounds of kernels per acre, down from last year's 1,450 pounds. This year's crop is progressing well and appears to be slightly ahead of normal. Condition and quality are good to excellent. The nut size is slightly larger than normal.

Although production in 1989 will be well below previous levels, supply will be down only about 6 percent because of

Figure 21

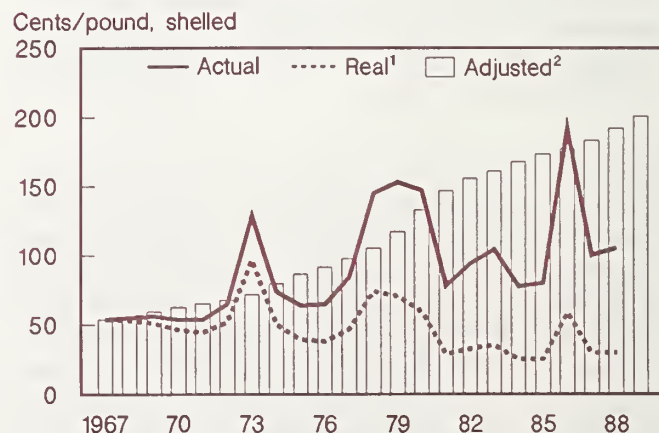
Grower Prices for Almonds, Pecans, and Walnuts



Shelled basis.

Figure 22

Grower Prices for Almonds



1/ Actual prices deflated by CPI (1967=100).

2/ 1967 price adjusted by annual inflation rates.

large carryover stocks from last season. Supply this season is comparable to 1985/86. Supplies should be ample to meet export and domestic market demand and prices are expected to be slightly higher for the 1989/90 marketing season. Last year growers received \$1.05 per pound and in 1987 the price averaged \$1.00. Opening f.o.b. shelled product price quotes are about 16 percent higher than last year.

World almond supplies are not yet well established. However, trade sources indicate that Spain, the second largest producing country behind the United States, expects to harvest a record crop, about 90,000 metric tons or 198 million pounds, shelled basis, up 125 percent from 1988. Were it not for rain and fog in February 1989 that hampered crop pollination, Spain could have produced as much as 110,000 metric tons this year.

Walnuts

Good U.S. Crop Expected

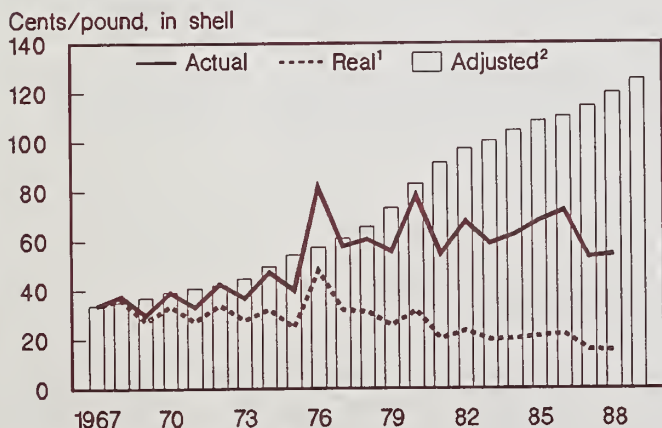
The USDA forecast for California's 1989 production of English walnuts is 210,000 tons (in-shell basis), 2 percent above 1988 production, but 15 percent lower than the 1987 record. Yield this year is expected to average 1.20 tons per acre, compared with 1.18 tons in 1988. Bearing acreage in 1989 is forecast at 174,600 acres, only slightly higher than 1988.

The 1989 crop is in good condition. The yield is likely to be above average for the Serr, Payne, and Ashley varieties but the Hartley variety has encountered a large nut drop.

The 1989/90 walnut supply is expected to be slightly lower than 1988/89. Export demand should continue strong as supplies have become low in many foreign countries, which could result in higher shipments from the United States. Domestic consumption of walnuts fell slightly during 1988/89, but may increase again in 1989/90.

Figure 23

Grower Prices for Walnuts



1/ Actual prices deflated by CPI (1967=100).

2/ 1967 price adjusted by annual inflation rates.

For the marketing year August 1, 1988, to July 31, 1989, export shipments of in-shell walnuts totaled 99.7 million pounds, 4 percent lower than in 1987/88. EC countries purchased 88.7 million pounds, in-shell, or 89 percent of the U.S. total. Shelled exports totaled 19.5 million pounds, up 22 percent from the previous season. Pacific Rim countries purchased 7.9 million pounds or 41 percent of the total U.S. shelled exports while the EC bought 6.6 million pounds or 34 percent of the total.

Pistachios

The 1989 production forecast for California pistachios will be available on September 12. This is the "off-year" in the alternating production cycle of this crop. Thus, production this season is likely to be sharply lower than the record crop of 94.0 million pounds, in-shell, harvested in 1988.

Although the average grower price received for the crop last year dropped to \$1.11 per pound, the total crop value rose to a record \$104 million. Bearing acreage in 1988 is estimated at 44,100 and for this year it is projected to continue climbing to 46,500 acres. Newly planted acreage in California, however, has fallen sharply in recent years. There is interest in other regions of the United States to grow this crop, particularly in Arizona, New Mexico, and Texas.

According to the California Pistachio Commission, marketing year shipments through July 31 reached a record 56.3 million pounds. About 81 percent went to domestic markets and the remainder to export. The industry carryover on August 31, 1989, is estimated at 11.8 million pounds of in-shell product. This is low, considering that the 1989 crop is expected to be small, which is likely to result in much higher prices in the 1989/90 season.

Hazelnuts (Filberts)

Smallest Crop Since 1984

The 1989 hazelnut crop in Oregon and Washington is estimated at 13,500 tons, in-shell basis, 18 percent below last year and the lowest since 1984's 13,400 tons.

Hazelnut trees, particularly the Barcelona variety, were adversely affected during the crucial pollination stage by a severe cold snap in early February. As a result, nut set is lighter than in 1988. Also, growers report a larger than normal number of blanks. Nut size, however, is up significantly from last year. The incidence of brown stain, although not widespread, is up slightly from a year ago. The number of bearing trees in Oregon continues to increase, while declining slightly in Washington.

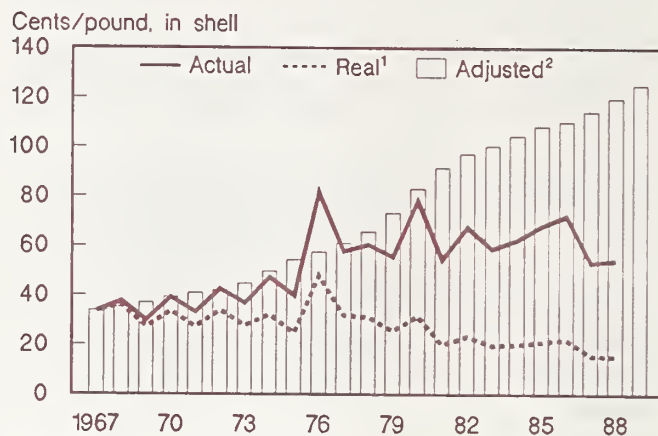
Other Tree Nuts

U.S. pecan production will be forecast on September 12. Early trade predictions indicate the 1989 crop is moderately below the 308 million pounds, in-shell basis, harvested last year. However, total supply is expected to continue large as beginning stocks were high. Domestic consumption has grown about 50 percent over the past two decades, reaching 130 million pounds in 1986. Since then consumption growth has been flat and will likely fall in 1989/90. Grower prices have averaged 53 to 54 cents per pound for the past two seasons, which is much lower than historical levels. Prices may improve this season due to the smaller crop.

Macadamia production in Hawaii for 1988 reached a record 45.5 million pounds. Grower prices also increased to 90 cents per pound. Macadamia nut production is expected to continue to grow steadily as newly planted acreage becomes productive.

Figure 24

Grower Prices for All Pecans



1/ Actual prices deflated by CPI (1967=100).

2/ 1967 price adjusted by annual inflation rates.

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Table 14--Apples, commercial crop 1/: Total production and season-average price received by growers, 1987, 1988, and indicated 1989 production

State and area	Production 2/			Price per pound	
	1987	1988	1989 3/	1987	1988
--Million pounds--			--Cents--		
Eastern States:					
Maine	75.0	94.0	68.0	19.1	19.7
New Hampshire	50.0	57.0	52.0	22.4	22.6
Vermont	44.0	45.0	45.0	18.0	18.4
Massachusetts	96.0	99.0	88.0	20.6	22.6
Rhode Island	5.0	5.5	5.0	23.3	24.4
Connecticut	45.0	47.0	40.0	20.9	24.5
New York	880.0	910.0	990.0	9.2	10.8
New Jersey	80.0	65.0	45.0	12.4	12.0
Pennsylvania	460.0	520.0	380.0	9.0	9.2
Delaware	26.0	19.0	15.0	10.6	12.2
Maryland	40.0	54.0	57.0	10.3	12.2
Virginia	481.0	425.0	380.0	9.3	11.1
West Virginia	180.0	215.0	160.0	7.5	9.5
North Carolina	390.0	350.0	230.0	6.4	8.0
South Carolina	45.0	38.0	36.0	8.4	12.1
Georgia	50.0	33.0	30.0	11.3	13.1
Total	2,947.0	2,976.5	2,621.0		
Central States:					
Ohio	150.0	95.0	125.0	15.8	17.7
Indiana	72.0	56.0	67.0	17.0	17.6
Illinois	103.0	85.0	93.0	11.9	16.3
Michigan	1,050.0	830.0	1,000.0	7.6	8.8
Wisconsin	65.0	45.0	63.0	15.5	21.2
Minnesota	26.0	14.0	22.0	23.0	30.2
Iowa	10.0	9.5	12.0	20.3	21.4
Missouri	53.0	56.0	53.0	9.9	17.2
Kansas	12.0	12.0	9.0	14.7	17.6
Kentucky	21.0	11.0	17.0	15.3	15.8
Tennessee	15.0	12.5	11.5	13.4	15.6
Arkansas	4.0	10.0	9.0	11.9	16.8
Total	1,581.0	1,236.0	1,481.5		
Western States:					
Idaho	155.0	135.0	145.0	10.6	14.0
Colorado	125.0	65.0	75.0	6.7	11.0
New Mexico	12.6	10.0	9.0	15.6	19.5
Utah	68.0	40.0	65.0	7.4	12.5
Washington	5,000.0	3,900.0	4,500.0	7.3	12.7
Oregon	210.0	165.0	185.0	5.4	12.0
California	650.0	630.0	650.0	11.1	18.7
Total	6,220.6	4,945.0	5,629.0		
United States	10,748.6	9,157.5	9,731.5	8.7	12.6

1/ In orchards of 100 or more bearing age trees.

2/ Includes unharvested production and harvested not sold (million pounds):
1987-296.8; 1988-49.6.

3/ Preliminary.

Sources: August 1989 Crop Production and Noncitrus Fruit and Nuts, Midyear Supplement, NASS, USDA.

Table 15--Fresh and processed apples: Season-average price received by growers, by type of use, principal States, 1986-88

Use and State	1986	1987	1988 1/
FRESH:			
	--Cents/pound--		
California	30.7	23.3	32.0
Michigan	15.2	11.0	13.2
New York	16.5	13.7	15.3
Virginia	14.6	13.4	14.3
Washington	18.6	10.4	15.7
United States	19.1	12.7	17.2
PROCESSED:			
	--Dollars/ton--		
Canning:			
California	142.00	123.00	156.00
Michigan	138.00	133.00	164.00
New York	130.00	126.00	160.00
North Carolina	162.00	121.00	148.00
Pennsylvania	124.00	117.00	148.00
Virginia	138.00	135.00	175.00
Washington	126.00	73.80	107.00
West Virginia	144.00	125.00	164.00
United States	132.00	118.00	152.00
Juice and cider:			
California	105.00	72.00	115.00
Michigan	104.00	84.00	106.00
New York	102.00	90.00	98.00
North Carolina	114.00	72.00	94.00
Pennsylvania	90.00	78.00	98.00
Virginia	100.00	86.00	116.00
Washington	77.00	32.80	76.30
United States	96.60	57.90	96.70
Frozen:			
Michigan	168.00	150.00	184.00
New York	(3)	128.00	164.00
Virginia	(3)	128.00	168.00
United States	150.00	132.00	164.00
Dried:			
California	140.00	121.00	(3)
United States	123.00	67.70	104.00
Other 2/			
Michigan	110.00	82.00	116.00
New York	134.00	130.00	154.00
United States	125.00	100.00	131.00
Processing Average:			
	116.00	79.30	123.00
	--Cents/pound--		
All apples	13.4	8.7	12.6

1/ Preliminary.

2/ Includes vinegar, wine, fresh slices for pie making.

3/ Data not available due to disclosure of individual operations.

Source: Noncitrus Fruit and Nuts, Midyear Supplement, NASS, USDA.

Table 16--Grapes: Total production and season-average price received by growers in principal States, 1987, 1988, and indicated 1989 production

States	Production 1/			Price per ton	
	1987	1988	1989 2/	1987	1988
	--1,000 short tons--			--Dollars--	
New York	178.0	157.0	155.0	228	230
Pennsylvania	62.5	58.0	57.0	235	215
Ohio	10.0	8.9	9.8	216	264
Michigan	60.0	53.0	50.0	260	256
Missouri	2.8	3.3	3.1	351	311
North Carolina	1.8	3.3	2.3	360	330
Georgia	2.7	2.5	2.8	870	911
South Carolina	0.7	0.5	0.3	344	394
Arkansas	5.0	7.0	5.0	269	300
Arizona	31.0	25.5	26.0	1,010	1,250
Washington	249.5	182.0	230.0	225	245
Total	604.0	501.0	541.3		
California:					
Wine	1,950.0	2,180.0	2,050.0	248	297
Table	540.0	755.0	700.0	435	262
Raisin 3/	2,170.0	2,550.0	2,600.0	223	201
All	4,660.0	5,485.0	5,350.0	258	247
United States	5,264.0	5,986.0	5,891.3	259	251

1/ Includes unharvested production and harvested not sold (tons): 1987-13,500; 1988-1,600.

2/ Preliminary.

3/ Fresh equivalent of dried and not dried.

Sources: August 1989 Crop Production and Noncitrus Fruit and Nuts, Midyear Supplement, NASS, USDA.

Table 17--Pears: Total production and season-average price received by growers, by States and Pacific Coast, variety comparison, 1987, 1988, and indicated 1989 production

State and area	Production 1/			Grower prices	
	1987	1988	1989 2/	1987	1988
	--Short tons--			--Dollars/ton--	
Connecticut	1,450	1,650	1,500	500.00	520.00
New York	15,000	17,300	16,500	259.00	235.00
Pennsylvania	3,200	3,200	3,000	270.00	339.00
Michigan	8,000	8,000	9,000	236.00	257.00
Colorado	8,000	3,800	4,000	199.00	251.00
Utah	3,600	2,000	3,100	272.00	384.00
Washington	336,000	310,000	290,000	202.00	291.00
Oregon	228,000	213,000	200,000	192.00	285.00
California	337,000	302,000	310,000	192.00	247.00
United States	940,250	860,950	837,100	198.00	273.00
Pacific Coast:					
Washington:					
Bartlett	171,000	147,000	135,000	189.00	244.00
Other	165,000	163,000	155,000	215.00	333.00
Total	336,000	310,000	290,000	202.00	291.00
Oregon:					
Bartlett	78,000	68,000	55,000	183.00	253.00
Other	150,000	145,000	145,000	197.00	300.00
Total	228,000	213,000	200,000	192.00	285.00
California:					
Bartlett	325,000	291,000	295,000	176.00	238.00
Other	12,000	11,000	15,000	645.00	477.00
Total	337,000	302,000	310,000	192.00	247.00
3 States:					
Bartlett	574,000	506,000	485,000	181.00	242.00
Other	327,000	319,000	315,000	222.00	323.00
Total	901,000	825,000	800,000		

1/ Includes unharvested production and harvested not sold (tons): 1987-2,650; 1988-350.

2/ Preliminary.

Sources: August 1989 Crop Production and Noncitrus Fruit and Nuts, Midyear Supplement, NASS, USDA.

Table 18--Plums and prunes: Production and season-average price received by growers in principal States, 1987, 1988 and indicated 1989 production

State and area	Production 1/			Grower price	
	1987	1988	1989 2/	1987	1988
	--Short tons--			--Dollars/ton--	
Prunes and plums: 3/					
Michigan	16,000	11,000	14,000	144.00	198.00
Idaho	6,200	6,500	6,500	134.00	283.00
Washington	12,300	13,500	13,000	134.00	187.00
Oregon	17,000	21,000	15,000	147.00	140.00
Total 4 States	51,500	52,000	48,500	141.00	183.00
Dried prunes:					
California	229,000	155,000	4/200,000	735.00	735.00
Plums:					
California	245,000	216,000	200,000	308.00	475.00
United States (fresh basis)	978,900	750,100	848,500		

1/ Includes unharvested production and harvested not sold (tons): 1987-4,300; 1988-3,900.

2/ Preliminary.

3/ Mostly prunes, however estimates include small quantities of plums in all States.

4/ Dry--fresh ratio is 3 to 1.

Sources: August 1989 Crop Production and Noncitrus Fruit and Nuts, Midyear Supplement, NASS, USDA.

Table 19--Strawberries: Acreage, yield per acre, and production for major States, 1987, 1988, and indicated 1989 1/

Crop and State	Acreage			Yield per acre			Production		
	1987	1988	1989	1987	1988	1989	1987	1988	1989
	--Acres--			--Cwt--			--1,000 cwt--		
Early:									
Florida	4,900	5,000	5,300	225	250	290	1,103	1,250	1,537
Late:									
California	16,800	17,600	19,000	490	490	490	8,232	8,624	9,310
Louisiana	600	700	650	72	75	62	43	53	40
Michigan	2,200	2,300	2,200	60	55	60	132	127	132
New Jersey	800	700	700	53	46	48	42	32	34
Oregon	7,800	7,800	6,000	120	130	110	936	1,014	660
Washington	2,500	2,400	2,300	96	92	70	240	221	161
Group total	30,700	31,500	30,850	314	320	335	9,625	10,071	10,337
Major State total	35,600	36,500	36,150	301	310	328	10,728	11,321	11,874

1/ Includes fresh market and processing.

Source: Vegetables, NASS, USDA.

Table 20--Canned noncitrus fruit: Canners' stocks, pack, supplies, and shipments, 1986/87-1988/89

Item and season 1/	Carryin	Pack	Total supply	Season shipments	June 1 stocks
--1,000 equivalent cases 24 No. 2-1/2's--					
Total:					
1986/87	13,069	33,000	46,069	38,060	8,009
1987/88	8,009	37,012	45,021	39,305	5,716
1988/89	5,716	39,843	45,559	41,540	5,819
Apricots: 2/					
1986/87	364	505	869	831	38
1987/88	38	1,281	1,319	1,187	132
1988/89	132	1,381	1,513	1,234	279
Fruit cocktail: 2/					
1986/87	2,973	8,976	11,949	9,679	2,270
1987/88	2,270	9,344	11,614	9,932	1,682
1988/89	1,682	9,724	11,406	10,342	1,064
Fruits for salad & mixed: 2/					
1986/87	1,066	1,845	2,911	2,210	701
1987/88	701	2,433	3,134	2,565	569
1988/89	569	2,306	2,875	2,533	342
Peaches, clingstone: 2/					
1986/87	5,648	14,465	20,113	16,779	3,334
1987/88	3,334	14,829	18,163	16,811	1,352
1988/89	1,352	17,263	18,615	16,281	2,334
Pears:					
1986/87	3,018	7,209	10,227	8,561	1,666
1987/88	1,666	9,125	10,791	8,810	1,981
1988/89	1,981	9,169	11,150	11,150	1,800

1/ Season beginning June 1.

2/ California only.

Sources: California League of Food Processors and Northwest Food Processors Association.

Table 21--Canned cherries and purple plums: Canners' stocks, pack, supplies, and shipments, 1986/87-1988/89

Item and season 1/	Carryin	Pack	Total supply	Shipments to April 1	Stocks from April 1	Shipments from April 1	Total season shipments
--1,000 equivalent cases 24 No. 2-1/2's--							
Total:							
1986/87	502	1,212	1,714	1,058	656	204	1,263
1987/88	451	1,413	1,864	1,226	640	265	1,490
1988/89	375	1,465	1,840	1,145	696	261	1,406
Cherries, RSP:							
1986/87	61	253	314	234	80	42	276
1987/88	38	474	512	379	134	94	472
1988/89	40	434	474	310	165	98	408
Cherries, sweet:							
1986/87	160	327	487	327	160	64	391
1987/88	96	451	547	340	207	56	396
1988/89	151	439	590	342	248	90	432
Purple plums:							
1986/87	281	632	913	497	416	98	596
1987/88	317	488	805	507	299	115	622
1988/89	184	592	776	493	283	73	566

1/ Season beginning July 1 for RSP cherries and June 1 for all others.

Source: National Food Processors Association.

Table 22--Frozen fruit: Packers' carryin, pack, imports, supplies, disappearance, and stocks of selected items, United States, 1986/87-1988/89

Item and season 1/	Carryin	Pack	Imports	Total supply	Disappearance to March 31	Stocks March 31	Total season disappearance
--Million pounds--							
Total:							
1986/87	210.4	589.7	106.1	906.2	633.0	273.2	647.2
1987/88	259.0	728.1	72.7	1059.8	662.6	397.2	764.7
1988/89	295.1	672.2	73.6	1040.9	623.2	417.7	617.4
Apples:							
1986/87	44.4	111.1	--	155.5	81.4	74.1	114.5
1987/88	41.0	122.4	--	163.4	76.5	86.9	128.1
1988/89	35.3	117.1	--	152.4	70.9	81.5	N.A.
Apricots:							
1986/87	3.3	14.3	--	17.6	15.1	2.5	16.4
1987/88	1.2	22.2	--	23.4	18.4	5.0	20.0
1988/89	3.4	14.7	--	18.1	14.1	4.0	14.9
Cherries, sweet:							
1986/87	7.1	14.4	--	21.5	13.2	8.3	15.1
1987/88	6.4	21.3	--	27.7	18.2	9.5	20.9
1988/89	6.8	18.5	--	25.3	7.6	17.7	9.7
Peaches:							
1986/87	9.3	100.7	--	110.0	85.7	24.3	98.0
1987/88	12.0	105.8	--	117.8	61.6	56.2	79.1
1988/89	38.7	110.3	--	149.0	75.5	73.5	107.2
Strawberries:							
1986/87	104.2	237.6	79.9	421.7	321.2	100.5	280.7
1987/88	141.0	334.5	53.8	529.3	367.4	161.9	364.2
1988/89	165.1	274.6	58.2	497.9	345.8	152.1	343.2
Blackberries:							
1986/87	6.6	13.0	--	19.6	7.2	12.4	9.6
1987/88	10.0	21.0	--	31.0	15.0	16.0	20.8
1988/89	10.2	21.4	--	31.6	15.4	16.2	22.2
Blueberries:							
1986/87	20.4	77.8	10.2	108.4	75.9	32.5	90.4
1987/88	18.0	69.2	14.7	101.9	70.1	31.8	86.1
1988/89	15.8	82.4	9.8	108.0	62.7	45.3	83.4
Boysenberries:							
1986/87	2.7	5.5	3.4	11.6	9.5	2.1	9.8
1987/88	1.8	5.2	1.1	8.1	4.8	3.3	5.7
1988/89	2.4	6.7	0.8	9.9	7.2	2.7	7.6
Raspberries:							
1986/87	12.4	15.3	12.6	40.3	23.8	16.5	12.7
1987/88	27.6	26.5	3.1	57.2	30.6	26.6	39.8
1988/89	17.4	26.5	4.8	48.7	24.0	24.7	29.2

N.A.= Not available.

1/ Season beginning May 1 for strawberries, June 1 for apricots and boysenberries, October 1 for apples, and July 1 for all other items.

Sources: (pack) American Frozen Food Institute, (stocks) Cold Storage Report, NASS, USDA, and (imports) Bureau of Census, U.S. Department of Commerce.

Table 23--U.S. Producer Price Indexes of selected dried and frozen juice items, by months, 1986-89

Items and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
-- 1982=100--												
Dried fruit:												
Prunes												
1986	101.5	101.5	101.5	101.5	101.5	101.5	101.5	101.5	101.5	101.5	101.5	101.5
1987	101.5	101.5	101.9	101.9	101.9	101.9	105.5	105.5	105.5	106.5	109.6	109.6
1988	109.6	109.6	109.6	109.6	109.6	109.6	109.6	109.6	110.3	110.3	110.3	110.3
1989	111.3	111.3	112.6	114.9	114.0	114.0	114.0					
Raisins												
1986	75.6	75.6	77.6	76.5	76.5	77.8	79.3	81.4	79.6	82.5	83.9	83.9
1987	83.9	83.9	83.9	83.9	83.9	83.0	83.9	83.9	82.2	82.2	86.4	88.2
1988	85.8	85.8	85.8	N.A.	88.2	88.2	88.2	88.2	88.2	84.2	89.9	89.9
1989	89.9	89.9	89.9	N.A.	N.A.	90.8	90.8					
Frozen juice:												
Orange, conc.												
1986	104.4	102.2	97.6	94.4	94.1	94.3	94.2	94.2	93.7	96.0	98.6	101.4
1987	106.9	106.9	107.4	109.5	109.7	110.0	110.1	111.0	110.6	110.6	117.2	129.9
1988	132.1	140.5	142.4	141.0	142.0	144.0	118.8	142.0	141.7	140.7	140.8	139.1
1989	137.3	127.7	126.5	125.4	130.6	138.8	140.7					
Grapefruit, conc.												
1986	134.5	134.1	129.4	136.9	138.5	146.0	150.7	153.2	153.2	153.2	153.2	153.3
1987	154.8	148.4	151.2	151.7	158.8	156.5	159.1	153.4	156.5	153.1	155.0	158.1
1988	159.6	160.0	155.5	153.6	161.4	160.2	162.2	161.1	161.1	148.9	155.5	147.5
1989	146.3	140.4	139.6	144.0	144.0	141.4	137.6					

N.A.= Not available.

Source: Bureau of Labor Statistics, U.S. Department of Labor.

Table 24--Fresh fruit: Retail price, marketing spreads, and grower-packer return per pound, sold in the Northeast and North Central regions, indicated months, 1988 and 1989

Region, commodity, and month	Retail price	Marketing margins		Grower-packer return 1/ (f.o.b. shipping point price)	
		Absolute	Percent of retail price	Absolute	Percent of retail price
	--Cents--		Percent	Cents	Percent
NORTHEAST:					
Apples, Washington Red Delicious:					
June 1988	75.2	46.7	62	28.5	38
June 1989	81.3	61.5	76	19.8	24
May 1989	80.5	55.7	69	24.8	31
Grapefruit, Florida:					
April 1988	45.3	32.2	71	13.1	29
April 1989	40.6	28.4	70	12.2	30
March 1989	40.5	28.4	70	12.1	30
Lemons, California:					
June 1988	89.4	54.9	61	34.5	39
June 1989	99.1	61.0	62	38.1	38
May 1989	102.7	70.8	69	31.9	31
Oranges, California Navel:					
May 1988	68.3	43.1	63	25.2	37
May 1989	58.6	38.3	65	20.3	35
April 1989	53.1	35.2	66	17.9	34
NORTH CENTRAL:					
Apples, Washington Red Delicious:					
June 1988	76.0	47.5	63	28.5	37
June 1989	74.8	55.0	74	19.8	26
May 1989	73.5	48.7	66	24.8	34
Grapefruit, Florida:					
April 1988	48.7	35.6	73	13.1	27
April 1989	43.3	31.1	72	12.2	28
March 1989	45.9	33.8	74	12.1	26
Lemons, California:					
June 1988	105.9	71.4	67	34.5	33
June 1989	109.7	71.6	65	38.1	35
May 1989	90.7	58.8	65	31.9	35
Oranges, California Navel:					
May 1988	61.9	36.7	59	25.2	41
May 1989	55.8	35.5	64	20.3	36
April 1989	56.1	38.2	68	17.9	32

1/ Adjusted to account for waste and spoilage incurred during marketing.

Sources: Bureau of Labor Statistics, Department of Labor and Commodity Economics Division, ERS, USDA.

Table 25--Fresh fruit: Representative truck rates for selected fruits, January-June, 1988-89 1/

Commodity, shipping point, and city	1988						1989					
	Jan.	Feb.	Mar.	Apr.	May	June	Jan.	Feb.	Mar.	Apr.	May	June
--Dollars per shipping container--												
Apples (tray packed carton)												
Central Washington to:												
Atlanta	2.88	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.93	2.93	2.93	2.93
Chicago	2.13	2.05	2.05	2.05	2.05	2.05	2.10	2.10	2.20	2.20	2.18	2.18
Dallas	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Denver	1.50	1.50	1.50	1.50	1.50	1.50	1.65	1.65	1.55	1.55	1.60	1.60
Los Angeles	1.50	1.75	1.55	1.55	1.55	--	1.65	1.65	1.60	1.60	1.63	1.63
New York City	3.30	3.30	3.30	3.30	3.30	3.30	3.35	3.33	3.35	3.30	3.30	3.30
Eastern New York to:												
New York City	0.58	0.58	0.58	0.58	0.58	--	0.58	0.58	0.58	0.58	--	--
Virginia-West Virginia to:												
Atlanta	0.94	0.94	0.94	0.94	--	--	0.93	0.93	0.93	0.93	--	--
New York City	0.76	0.76	0.76	0.76	--	--	0.74	0.74	0.74	0.74	--	--
Grapefruit (4/5 bushel carton)												
Florida to:												
Atlanta	0.68	0.65	0.65	0.65	0.83	0.88	0.75	0.75	0.68	0.70	0.85	0.90
Chicago	1.30	1.33	1.33	1.33	1.50	1.73	1.35	1.35	1.25	1.30	1.58	1.75
New York City	1.38	1.35	1.35	1.35	1.53	1.75	1.38	1.38	1.25	1.35	1.60	1.80
Grapes (23 pound lug)												
Kern District California to:												
Atlanta	1.15	--	--	--	--	--	1.21	1.21	1.21	1.24	--	--
Chicago	1.09	--	--	--	--	--	1.12	1.12	1.12	1.18	--	--
Dallas	0.79	--	--	--	--	--	0.91	0.91	0.82	0.91	--	--
New York City	1.53	--	--	--	--	--	1.59	1.59	1.59	1.59	--	--
Citrus (7/10 bushel carton)												
Southern California to:												
Atlanta	1.90	1.95	1.95	2.15	2.05	2.45	2.05	2.05	2.00	2.00	2.25	3.03
Chicago	1.70	1.70	1.70	1.85	1.85	2.45	1.75	1.75	1.75	1.80	2.00	2.60
Dallas	1.30	1.35	1.50	1.65	1.65	1.85	1.50	1.50	1.45	1.60	1.70	2.15
Denver	1.00	1.00	1.05	1.20	1.20	1.20	1.10	1.10	1.10	1.10	1.20	1.60
New York City	2.60	2.70	2.85	2.90	2.95	3.80	2.70	2.70	2.65	2.65	3.00	4.50
Oranges (4/5 bushel carton)												
Florida to:												
Atlanta	0.70	0.68	0.68	0.68	0.83	0.88	0.75	0.75	0.67	0.75	0.90	0.98
Chicago	1.33	1.33	1.33	1.33	1.55	1.78	1.33	1.33	1.25	1.35	1.58	1.75
New York City	1.40	1.25	1.35	1.38	1.55	1.78	1.33	1.33	1.28	1.35	1.60	1.80

-- = Not available

1/ Reported from a sample of shippers and/or truck brokers in specified areas for shipments during the first week of each month.

Source: Fruit and Vegetable Truck Rate Report.

Table 26--U.S. monthly average price indexes for fruits, selected months, 1988-89

Items	1988							1989						
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	
-- 1982=100--														
Producer Price Index:														
Fresh fruits	117.7	110.3	119.9	111.8	125.1	119.9	107.8	110.0	113.5	104.5	109.4	112.2	114.1	
Citrus fruits	152.0	152.0	151.8	172.0	143.2	121.3	118.5	116.8	119.1	115.7	132.9	141.4	149.9	
Other fruits	105.3	95.3	108.5	90.1	118.6	119.3	103.9	111.8	111.4	100.5	100.9	101.7	101.2	
Canned fruit and juices	120.2	120.4	120.5	120.6	121.8	122.4	121.8	121.9	121.8	122.0	122.0	122.7	123.4	
Canned fruits	114.9	114.9	114.8	115.2	117.8	118.8	117.5	119.4	119.4	119.6	119.4	119.4	121.1	
Canned fruit juices	125.8	126.0	126.3	126.2	126.3	126.6	126.5	124.9	125.0	125.9	125.5	126.7	126.6	
Frozen fruits and juices	130.4	130.8	130.7	129.6	130.0	128.6	127.3	122.1	121.1	119.6	122.3	128.4	129.0	
Frozen fruits	116.9	117.0	117.1	116.5	116.3	116.3	116.2	117.4	117.0	117.7	117.7	117.7	118.3	
Frozen juices	132.1	132.5	132.3	131.2	131.8	130.1	128.5	122.1	121.0	119.2	122.4	129.6	130.2	
Dried fruits	99.3	99.3	99.8	97.4	100.7	100.8	101.1	101.1	101.9	102.9	102.3	102.8	102.8	
-- 1982-84=100--														
Consumer Price Index:														
Fresh fruits	147.8	150.1	153.3	149.7	144.3	143.2	145.4	150.0	149.5	152.4	158.1	151.7	150.6	
Processed fruits	123.0	123.4	123.8	124.3	125.0	124.4	125.6	125.5	124.7	124.6	125.1	125.6	126.0	
Fruit juices and frozen fruits	124.7	124.9	125.3	126.0	126.8	126.2	127.5	127.1	126.0	125.6	126.4	126.7	127.2	
Canned and dried fruits	115.0	116.3	116.5	116.4	116.7	115.9	117.0	117.7	118.2	118.9	118.7	119.7	120.0	
-- 1977=100--														
Index of all fruit prices received by growers 1/	194	182	187	189	194	192	177	176	158	166	201	197	159	

Sources: Bureau of Labor Statistics, U.S. Department of Labor and Agricultural Prices, NASS, USDA.

Table 27--Canned citrus juices: Cannery's packs, supplies, and movement, Florida, 1986/87-1988/89

Item and season	Carryin	Pack		Supply		Movement		Stocks 1/
		To date 1/	Total season	To date 1/	Total season	To date 1/	Total season	
--1,000 cases, 24 No. 2's--								
Oranges: 2/								
1986/87	986	7,433	8,122	8,419	9,108	7,239	8,084	1,181
1987/88	1,024	6,579	7,256	7,603	8,280	6,709	7,425	894
1988/89	855	7,599		8,454		7,517		937
Grapefruit: 3/								
1986/87	1,515	8,509	8,982	10,024	10,497	8,096	9,027	1,928
1987/88	1,471	6,579	7,724	8,050	9,195	7,101	7,871	1,516
1988/89	1,323	7,599		8,922		7,205		1,533
Blend:								
1986/87	126	493	533	619	659	474	533	144
1987/88	126	443	449	569	575	419	458	151
1988/89	117	393		510		399		111

1/ For 1988/89 season, week ending August 26; 1987/88, August 27; and 1986/87, August 22. These respective dates include data through the 47th week of each season.

2/ Includes reconstituted orange juice.

3/ Includes reconstituted grapefruit juice.

Source: Florida Citrus Processors Association.

Table 28--Frozen concentrated citrus juices: Cannery's packs, supplies, and movement, Florida, 1986/87-1988/89

Item and season	Carryin	Pack		Supply		Movement		Stocks 1/
		To date 1/	Total season	To date 1/	Total season	To date 1/	Total season	
--1,000 gallons 2/--								
Oranges:								
1986/87	36,995	199,767	227,871	236,762	264,866	160,884	225,076	75,878
1987/88	39,790	213,288	240,861	253,078	280,651	175,914	238,567	77,164
1988/89	42,084	217,354		259,438		177,620		81,818
Grapefruit:								
1986/87	3,422	29,970	30,244	33,392	33,666	21,531	28,453	11,861
1987/88	5,216	33,111	33,463	38,327	38,679	21,256	28,881	17,071
1988/89	9,798	32,771		42,569		21,392		21,177
Tangerines:								
1986/87	279	836	471	1,115	750	960	660	155
1987/88	90	831	1,242	921	1,332	806	1,007	115
1988/89	325	568		893		588		305

1/ For 1988/89 season, week ending August 26; 1987/88, August 20; and 1986/87, August 15. These respective dates include data through the 38th week of each season.

2/ Oranges--42.0 degree Brix, grapefruit--40 degree Brix, and tangerines--42 degree Brix.

Source: Florida Citrus Processors Association.

Table 29--U.S. exports of selected fresh noncitrus fruits, by destination,
1986/87-1988/89

Item and season 1/	Canada	EC 2/	Taiwan	Hong Kong	Other	Total
--Metric tons--						
Apples:						
1986/87	42,072	11,581	37,115	18,274	59,232	168,274
1987/88	41,099	28,273	73,641	40,083	110,115	293,211
1988/89	51,541	24,291	46,040	27,258	100,081	249,211
Grapes:						
1986/87	56,665	3,605	12,416	10,056	19,333	102,075
1987/88	64,862	6,049	10,522	9,183	20,972	111,588
1988/89	73,786	6,111	12,762	18,055	27,474	138,188
Pears:						
1986/87	18,742	948	--	--	16,675	36,365
1987/88	18,997	2,284	--	--	22,549	43,830
1988/89	27,477	2,957	--	--	30,368	60,802

1/ Season beginning July 1 for apples and pears, June 1 for grapes.

2/ Belgium-Luxembourg, France, West Germany, Italy, Netherlands, Greece,
United Kingdom, Ireland, Denmark, Spain, and Portugal.

Source: Horticultural Products Review, FAS, USDA.

Table 30--U.S. exports of selected canned noncitrus fruits, by destination,
1986/87-1988/89

Item and season 1/	Canada	Taiwan	Hong Kong	Japan	Other	Total
--Metric tons--						
Peaches:						
1986/87	2,427	1,433	--	8,690	3,442	15,992
1987/88	2,313	2,866	--	9,899	3,544	18,622
1988/89	1,755	3,154	--	9,013	3,614	17,536
Fruit mixtures:						
1986/87	4,276	--	2,637	3,314	8,683	18,910
1987/88	6,591	--	3,418	5,285	9,237	24,531
1988/89	4,758	--	1,433	7,201	9,581	22,973
Pears:						
1986/87	81	--	--	146	1,124	1,351
1987/88	155	--	--	206	657	1,018
1988/89	96	--	--	221	714	1,031

1/ Season beginning June 1.

Source: Horticultural Products Review, FAS, USDA.

Aggregate Indicators of the U.S. Fruit and Tree Nut Industries

by

Boyd M. Buxton ^{1/}

Abstract: Nine categories of economic indicators related to the U.S. fruit and tree nut industries are described. The indicators include those that summarize the general economic conditions in the economy, indexed price changes of key fruit commodity groups at the farm, wholesale, and retail levels, changes in marketing charges between the farm and retail, and changes in the real exchange rates between the United States and major importing and exporting countries.

Keywords: Fruit price indices, economic indicators, fruit, tree nuts.

The U.S. fruit and tree nut industries accounted for 12 percent of total cash farm sales in 1988. The industries are made up of numerous commodities, most of which have somewhat related but, for the most part, unique markets. Describing the economic situation of the fruit and tree nut industries is complex given the numerous commodities involved. To assist in this endeavor this issue of the Fruit and Tree Nuts Situation and Outlook Report presents a new table of the economic indicators related to the U.S. fruit and tree nut industries (see table 1). The table has nine categories of indicators: 1) General economic variables that describe the economic environment affecting the fruit and tree nut industries; 2) indexes of prices received by fruit growers; 3) indexes of prices paid by farmers; 4) producer price indexes to measure prices of finished food items at the wholesale level; 6) consumer price indexes to measure retail fruit prices; 7) farm/retail price spreads; 8) production aggregates and per capita consumption totals; and 9) aggregate imports and exports and changes in the real exchange rates with major fruit and tree nut trading partners and competitors.

General Economic Indicators

The fruit and tree nut industries are influenced directly and indirectly by the general state of the economy, the size of the population, and the personal income available to consumers. The Gross National Product (GNP) in real terms is presented in the new table to show the general growth in the economy. GNP is the money value of the total output of goods and services within the United States in a year's time, before allowance is made for depreciation and consumption of capital goods. When stated in real terms, GNP measures the growth or decline in the real output of goods and services and is a barometer of economic conditions in the general economy. Increases in real GNP indicate that the economy is growing and that a generally favorable business climate exists.

The second variable in the general economic indicators is the percentage change in the GNP implicit price deflator. Changes in this variable indicate the overall inflation rate in the general economy.

The demand for fruit and tree nuts is affected by the disposable personal income of consumers generally. Disposable personal income is the income available for new purchases less payments currently due on commitments previously made by consumers. As disposable consumer income rises, consumers usually will spend more for fruit and tree nut commodities.

The U.S. civilian population (excluding military) is a measure of the overall scope of the domestic fruit and tree nut markets. A growing population means larger potential markets for fruit and tree nut products.

Indexes of Prices Received by Farmers

The index of prices received for all farm products is a fixed-weighted aggregation of the prices for 45 commodities. These commodities accounted for over 91 percent of total value of marketings during 1971-73. An "all-crops" index is made up by combining eight subgroups, one of which is "all fruit." In addition, an index for "fresh market fruit" is calculated as a separate category.

The all fruit and the fresh market fruit indexes of prices received by growers are calculated from the prices of seven fruits (table A-1). In 1988 these seven commodities represented about 62 percent of the total value of U.S. citrus, non-citrus, and strawberry crops. The index does not reflect the price changes for other fruits.

The relative weights given to commodities in the all fruit index are: oranges, 33.3 percent; apples, 24.5 percent; grapefruit, 11.1 percent; peaches, 11.1 percent; strawberries, 8.9 percent; lemons, 6.7 percent; and pears, 4.4 percent. The relative importance of the all fruit index to the index of prices

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Table A-1--Commodities used to construct the all and fresh fruit price indexes and impact of a change in price per unit on the index

Commodity	Pricing unit	Absolute change in index resulting from a 1-cent increase in unit price
ALL FRUIT PRICE INDEX		
Price for all: 1/		
Apples	lb.	3.2780
Grapefruit	box	0.0350
Lemons	box	0.0100
Oranges	box	0.1140
Peaches	lb.	1.3480
Pears	ton	0.0004
Strawberries	lb.	0.2629
FRESH FRUIT PRICE INDEX		
Price for fresh:		
Apples	lb.	2.2760
Grapefruit	box	0.0430
Lemons	box	0.0130
Oranges	box	0.1460
Peaches	lb.	0.6750
Pears	ton	0.0002
Strawberries	lb.	0.2140

1/ Fresh and processed.

received for all farm products is 4.5 percent and is based on the relative share of value of marketings during 1971-73.

The impact of a 1-cent change in the price per unit on the all fruit and the fresh fruit prices received indexes is shown in table A-1. For example, a 1-cent increase per pound in the all apple price will raise the all-fruit index 3.278 points and a 1-cent increase in the fresh apple price will increase the fresh fruit index 2.276 points.

The index of grower prices received for all fruit dropped to 159 in July 1989 from 194 in July 1988 (table 1). This decline was due to significant declines in prices of oranges, apples, strawberries, and grapefruit that more than offset increases in the prices of peaches, pears, and lemons. Changes in the prices received for other fruit are not reflected in either the all or fresh fruit indexes.

Indexes of Prices Paid by Farmers

Like the prices received index, the prices paid by farmers is a fixed-weighted price index. The index of prices paid for "all production items" is a composite of 12 sub-indexes including feed, feeder livestock, seed, fuels and energy, farm and motor supplies, autos and trucks, tractors and self-propelled equipment, other machinery, building and fencing materials, fertilizer, agricultural chemicals, and farm services and cash rent. Three of the sub-indices are shown in the new indicator table because they are more relevant to fruit growers: fertilizer, agricultural chemicals, and fuels and energy. The relative importance of each in the index of prices paid for all production items is 7.3 percent for fertilizer, 3 percent for agricultural chemicals, and 6.1 percent for fuels and energy.

Three additional expense categories are for interest, taxes, and wages. The index of interest paid reflects interest paid per acre for loans secured by farm real estate. The index of taxes paid reflects taxes payable per acre on farm real estate while the index of wages paid reflects wages paid to hired farm labor.

These indexes represent prices paid across all of agriculture, but are used to indicate the likely changes in prices paid by U.S. fruit growers.

Producer Price Indexes

Producer price indexes (PPI) are reported by the Bureau of Labor Statistics for four fruit categories: fresh, dried, canned, and frozen and juice. These indexes are a component of the overall PPI that covers about 3,100 agricultural and nonagricultural commodities. The PPI is designed to measure the changes in prices received for the output of domestic industries and, therefore, prices at the wholesale level. Prices are normally reported by mail questionnaire for the Tuesday of the week containing the 13th day of the month.

The PPI for fresh fruit is a composite of the prices of four citrus fruits (grapefruits, lemons, valencia oranges, and navel oranges) and five noncitrus fruits (Delicious apples, McIntosh apples, peaches, strawberries, and cantaloupes). The PPI for dried fruit is a composite of prices for prunes, raisins, and all other dried and dehydrated fruit. The PPI for canned fruits and juices reflects all canned fruits reported with no specific fruit designated. Therefore, the index at two points in time may reflect a different mix of canned fruits.

The PPI for frozen fruit and juices is a composite of prices for frozen blueberries, frozen orange, grapefruit, and grape juices, frozen lemonade, and other concentrated frozen fruit and berry juices.

Consumer Price Indexes

The overall consumer price index (CPI) is the weighted average of price changes for goods and services commonly purchased by consumers. It is used to measure changes in the purchasing power of the dollar generally. Food, weighted 16.171 percent in the overall CPI, is a composite of important food groups including "fresh fruits" and "processed fruits." The CPI indexes are measures of price levels at retail, the point of final sale to the ultimate consumer.

The "fresh fruit" CPI is a weighted composite of the prices of apples (17.9 percent), bananas (11.5 percent), oranges, including tangerines (14.5 percent), and other fresh fruits (33.3 percent). The "other fresh fruit" category is a random sample of other fruits available in the store when the survey of consumer prices is taken. Therefore, the other category is not a fixed basket of fresh fruit commodities but can represent different commodities over time. The relative importance of fresh fruit in the overall CPI is 0.593 percent.

The "processed fruit" CPI is a weighted composite of the prices of fruit juices and frozen fruit (79.6 percent) and canned and dried fruits (20.4 percent). The relative importance of processed fruit in the overall CPI is 0.392 percent.

Farm-Retail Price Spreads

The farm-retail price spread is the difference between what farmers get for the food commodities they sell and the prices consumers pay for that food. It represents charges for assembly, processing, transportation, and distribution of food commodities after they leave the farm. The Economic Research Service computes price spreads for a "market basket" of food consisting of 11 major food groups. Changes in retail prices of the market basket are components of the Consumer Price Index for food at home published monthly by the Bureau of Labor Statistics. The farm value is calculated from prices farmers receive for commodities and the quantity of farm product equivalent to the retail unit less an allowance for byproducts. The farm values reflect prices at the first point of sale.

Three of the food groups in the market basket index are fresh fruits, fresh vegetables, and processed fruits and vegetables. Changes in the indexes indicate the general changes in marketing charges or margins between farm and retail for fruits and vegetables and can be compared to changes in the farm-retail price spread for the market basket of commodities as a benchmark.

Production and Per Capita Consumption

Production of total citrus and noncitrus in tons is presented in the new indicators table to provide a measure of the overall growth of the fruit and tree nut sectors and the year-to-year variations caused by general weather conditions and other factors. The per capita consumption figures indicate the growth in consumer preferences for fruits and tree nuts.

Exports and Imports of Fruit and Tree Nuts

Total quantities of fruit and nut imports and exports are shown in the new table to indicate general trends and current changes in trade.

Real Exchange Rates

Changes in the value of the U.S. dollar relative to the currencies of major trading countries directly affect the economic incentives to trade U.S. fruit and tree nuts and related products with foreign countries. The new indicators table presents the real exchange rate between the United States and selected fruit importing and exporting countries. The nominal exchange rates have been adjusted for inflation in each of the countries in order to isolate the change in the real purchasing power of the dollar in terms of the other currencies. When the U.S. dollar appreciates in real value relative to the currency of a major trading partner, the incentive to import increases and the incentive to export decreases. The opposite is true when the real value of the U.S. dollar falls (depreciates) relative to the other currencies.

Changes in the real value of the dollar are not uniform or even in the same direction in all countries. For example, the changes in the real exchange rates shown in the new indicator table indicate that from July 1988 to July 1989 the real value of the dollar rose against the Japanese yen, Canadian dollar, United Kingdom pound, and the New Zealand dollar, but fell against the Hong Kong dollar, Chilean peso, and the Taiwan new dollar.

Price Forecasting Equations for Tree Nuts

by

Albert Ade. Okunade*

Abstract: Price forecasting equations are analyzed for five tree nuts using 1970/71-1987/88 annual data. Reduced-form single-equation multivariate Box-Cox regression price models consisting of supply and demand determinants across several market levels are evaluated for each tree nut. Significant predictors of future farm price levels include: current domestic production, carryover stocks, one-period lagged exports, per capita disposable income, and per capita consumption and prices of related tree nuts. Elasticity estimates show complementary and substitution relationships to vary among the tree nuts and the short-run stability of these relationships can be expected to influence farm prices. Given projected measurements of the various determinants, the forecasting equations are capable of predicting farm prices of individual tree nuts under various scenarios.

Keywords: Price forecasting model, tree nuts, demand elasticities.

Introduction

Despite record supplies of most tree nuts during 1987, growers generally received relatively high prices. However, pecan farmers on average received 19 cents less per pound in 1987 than in 1986. Over the years, the relative importance as measured by per capita consumption has shifted among three primary tree nuts: almonds, pecans, and walnuts. These shifts are generally consistent with the on-off years of the alternating production cycles. In effect, relative shifts in the compositional mix of total tree nut availability and the specific complementary or substitution relationships among tree nuts could be expected to influence farm prices, marketing margins, and profitability of each tree nut.

Price forecasting equations were developed for five tree nuts: almonds; hazelnuts^{1/}; macadamias; pecans; and English walnuts. The price-dependent models yield quantitative estimates on how variations in availability and price of each nut influence the season-average grower price. Previous investigations (Bushnell and King; Huang and Conway; Huang, Conway and Peacock; Epperson and Allison; Shafer and Hertel; Wells, Miller, and Thompson) were limited to a single tree nut, such as pecans or almonds. Price forecasting models do not exist for many tree nuts.

There are four important integrative strengths of this research. First, it is a systematic analysis of price forecasting equations for tree nuts based on recent data series. Second, it uses a flexible functional specification (of the Box-Cox power family type) that reduces the constraints on the data. Third, elasticities at mean levels are presented for individual tree nuts. And fourth, policy implications of the

estimates are assessed. Results provide tree-nut growers and policy analysts with information on how the general income level and specific relationships within the tree-nut family influence farm prices of tree nuts. Variations in market prices due to output changes between production periods are useful for making agricultural price policy decisions.

Method of Analysis

Prices farmers receive for individual tree nuts are determined jointly by such factors as the general-income level, consumer tastes and preferences, advertisement of substitute nuts, and supplies, including current domestic production and carryover stocks. Therefore, a simultaneous equation model capturing the demand and supply components of the market can be estimated. Alternatively, a single reduced-form equation for grower prices containing supply and demand determinants can be estimated. The reduced-form parameter estimates are useful for estimating future farm-level grower prices.

Peculiarities of each nut also influence prices. For instance, the United States is the world's leading producer and exporter of pecans and almonds. Therefore, lagged-export volume (or price, or both?) is expected to be an important determinant in price models of exported nuts. Moreover, production and beginning stocks are expected to significantly affect the current season-average prices received by tree-nut farmers. Carryover stocks (or inventory levels) serve to moderate price fluctuations during low and high production years. Per capita consumption and farm prices of related nuts could significantly affect prices farmers receive for a specific nut.

Previous price studies of almonds and pecans estimated linear or double-logarithmic functional forms. These specifica-

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tions imposed constraints that are not necessarily consistent with the observed data. While linear or double-log specifications may be convenient and computationally inexpensive, and may facilitate inference, there is a risk of functional misspecification if significant nonlinearities characterize the data. Therefore, approximation errors of insufficiently flexible functional forms may be in excess of the desired statistical tolerance level.

To minimize misspecification errors, the *a priori* flexible extended Box-Cox model (where all variables receive the same power transformation) is used in this study. With this model, the data themselves determine a better fit than with the more constrained models. The reduced-form price equation in parametric form is as follows:

$$(1) \text{IPRIC}_t^{(\lambda)} = \beta_0 + \beta_1 \text{IPROD}_t^{(\lambda)} + \beta_2 \text{IEXPT1}_t^{(\lambda)} + \beta_3 \text{IBSTK}_t^{(\lambda)} + \beta_4 \text{JPRIC}_t^{(\lambda)} + \beta_5 \text{PKINC}_t^{(\lambda)} + \beta_5 \text{JCONS}_t^{(\lambda)} + \dots + e_t,$$

where the prefix "I" signifies measurements on a specific tree nut being modeled and the prefix "J" indicates variables pertaining to related nuts (such as farm-level prices, JPRIC, or per capita consumption quantities of related nuts, JCONS); PKINC is the per capita disposable income level, and the error term e_t is appended to reflect the time series multiple regression model as an approximation of a complex real world phenomenon. Data utilized are annual 1970/71-1987/88 time series observations reported by the Economic Research Service (ERS) and the U.S. Department of Commerce.^{2/}

The respective variables in the price equations (except the dummy variable) have been power transformed such that, for a given variable V_t ,

$$(2) V_t^{(\lambda)} = (V_t^{(\lambda)} - 1)/\lambda, \text{ if } \lambda \neq 0; \text{ and} \\ V_t^{(\lambda)} = \log V_t, \text{ as } \lambda \rightarrow 0.$$

When the estimated $\lambda = 0$, (1) reduces to a double-logarithmic function. When $\lambda = 1$, (1) reduces to a strictly linear model. The estimated value of λ yielding the maximum of the sample log likelihood function of (1) is determined by each data set. Economic theory expects us to find an inverse relationship between own-price and own-current production and beginning stocks. The coefficients on income and lagged export variables are expected to be positive. Prices (quantities) of substitute nuts are expected to be positively (negatively) correlated with the price of the nut being modeled.

Results and Implications

Table B-1 presents the estimation results of the Box-Cox regression models. The dependent variables are APRIC, HPRIC, MPRIC, PPRIC, and WPRIC; respectively the farm-level annual average season prices of almonds, hazelnuts, macadamias, pecans, and walnuts. Depending on the equation,^{3/} the independent variables are current domestic production of almonds, hazelnuts, macadamias, pecans, and walnuts (respectively: APROD, HPROD, MPROD, PPROD, WPROD); their corresponding beginning stocks (respectively: ABSTK, HBSTK, MBSTK, PBSTK, WBSTK); their one-period lagged exports (respectively: AEXPT1, HEXPT1, MEXPT1, PEXPT1, WEXPT1); nominal per capita disposable personal income (PKINC); ADUM is the zero-one control variable for the abnormally high 1973 almond price, due to foreign demand pressure for almonds when the U.S. dollar was devalued. Finally, per capita consumption of other tree nuts (brazil, pignolia, pistachios (until 1977), chestnuts, cashews and miscellaneous) and walnuts are respectively, OTNCONS and WCONS.

The statistical significance of most parameter estimates and the various indicators of overall model fit (summary statistics in Table B-1) are fairly satisfactory across tree-nut price models.^{4/} Table B-1 also shows significant variations in the substitution and complementary relationships among the tree nuts. The inability of previous studies to capture these relationships may largely derive from their small samples and restrictive functional forms. Other things equal, the negatively (positively) signed coefficients in each price model serve to depress (increase) the price farmers receive for the specific tree nut. Consider the case of pecans, where larger beginning stocks and current season production adversely affect farm prices. This finding partly explains why pecan prices at the farm significantly fell for the 1987 crop year.

Table B-2 presents reduced-form elasticities for each nut. These elasticities measure the percentage response of tree nut prices (the dependent variable) to a 1-percent change in each nut's current domestic production volume, beginning stocks, income, and so on. These elasticities can be useful for analyzing the effects of agricultural policies and programs on tree-nuts price and, hence, producer returns. The various statistically significant cross-effects in the individual price equation are arrayed in Table B-2. Most cross-effects show significant substitution relationships at the farm level, as expected. At least two explanations can be advanced for this observation. First, most tree nuts are used in various forms in the processing of different food items, including ice cream, chocolate and other confectioneries, salted mixed nuts, syrup, milk and soft-drink flavoring, tree-nut oil in perfumes and cosmetics, pastries, and in the production of cold breakfast cereals. Second, the simultaneous availability of most tree nuts due to their partially overlapping marketing seasons^{5/} increases the likelihood of the observed substitutions among the various tree nuts. The three major tree nuts

depict positive income elasticities and the farm prices of minor nuts (hazelnuts and macadamias) do not show significant sensitivity to the general income level.

Estimated values of the dependent variables track the actual values very well for each tree nut, as is also evident from the various statistical indicators of model fit. The results identify the specific determinants affecting the farm price of each tree nut. Given projected measurements on the independent variables, the equations can be used for forecasting short run prices of individual tree nuts under various scenarios.

Summary and Conclusion

This study used recent data to model how variations in the major determinants of the supply of and the demand for tree nuts influence the farm price of each tree nut. The flexible Box-Cox price explaining and forecasting model appears to perform quite well. Substitution and complementary relationships of related nuts vary across individual price equations of the tree nuts. The structure of these relationships appears stable and can be expected to influence future prices farmers will receive for their tree nuts.^{6/}

Footnotes

^{1/} The filberts industry is currently attempting to change "filberts" to "hazelnuts". Therefore, the new name is used in this paper.

^{2/} All prices are in-shell cents per pound and quantities of all the tree nuts are in-shell, millions pounds; except that almonds are measured shelled. Data are presented in the data appendix.

^{3/} Without sacrificing theoretical relevance only variables that increased the adjusted R^2 were used. Introduction of statistically insignificant variables appreciably decreased adjusted R^2 's and were also omitted from the models to conserve the degrees of freedom in statistical estimation. In the almond price equation, lagged almond export (AEXPT1) and beginning inventories (ABSTK) are highly correlated in the order of 0.88. APRIC is more strongly influenced by ABSTK than by AEXPT1. Therefore, ABSTK is retained in the APRIC specification. The insignificant control (ADUM) for the 1973 abnormal almond price is correctly signed as expected, but is no longer relevant for the determination of future almond prices at the farm level.

^{4/} Detailed results of residual analysis (including the normality tests) and further tests of regression misspecifications are available from the author on request. Parameters reported for each model are well-behaved.

^{5/} Marketing seasons are August 5-November 15, October 1-September 30, January 1-December 31 (with August 1-December 31 the peak), and September 30-March 15; respectively for almonds, filberts, macadamias and pecans.

^{6/} Indicated by Theil's inequality coefficient and an examination of its decomposition.

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Table B-1--Estimated Box-Cox parameters of price equations for individual tree nuts 1/

Independent variable	Dependent Variable 2/				
	APRIC	HPRIC	MPRIC	PPRIC	WPRIC
APROD	-0.874 (-4.46)***	--	--	--	--
ARPIC	--	--	--	--	0.159 (2.65)***
ABSTK	-0.402 (-3.31)***	--	--	--	--
WBSTK	--	--	--	--	-0.319 (-5.07)***
WPRIC	0.257 (1.29)	--	0.305 (3.84)***	0.318 (3.69)***	--
HPROD	--	-0.436 (-2.11)***	--	--	--
HEXPT1	--	0.239 (3.09)***	--	--	--
HBSTK	--	-0.106 (-3.19)***	--	--	--
OTNCONS	-0.495 (-2.65)***	-0.170 (-3.19)***	-0.490 (-2.94)***	--	--
WCONS	--	-0.292 (-2.04)**	--	--	--
MPROD	--	--	0.906 (4.15)***	--	--
PPROD	--	--	--	-0.906 (7.01)***	--
PBSTK	--	--	--	-0.22 (-2.38)***	--
PEXPT1	--	--	--	0.081 (1.39)	--
WPROD	--	--	--	--	-0.313 (-2.94)***
WEXPT1	--	--	--	--	0.370 (4.63)***
ADUM	0.118 (0.67)	--	--	--	--
PKINC	1.808 (4.42)***	-1.017 (-1.05)	-0.0147 (-0.14)	1.156 (4.75)***	0.059 (2.84)***
Constant	-4.667 (-2.73)***	6.018 (1.84)*	0.0204 (0.021)	0.393 (0.55)	8.073 (1.98)**
R2(R2)	0.88(0.83)	0.83(0.73)	0.98(0.97)	0.93(0.89)	0.93(0.90)
Box-Cox	-0.04	-0.27	0.15	-0.15	0.38
Max. Log-Likelihood	-69.79	-45.10	-41.30	-47.05	-43.73
MSE	0.019	0.0026	0.0139	0.0023	0.178
Durbin-Watson	1.83	2.30	1.90	1.93	1.77

1/ Asymptotic t-ratios in parentheses. 2/ Statistical significance at the .01, .05, and .10 levels are indicated by ***, **, and *, respectively.

Table B-2--Estimates of reduced form Box-Cox elasticities computed at mean levels

Dependent variable	Elasticities		
	Own	Cross [with respect to]	Income
APRIC	-0.835	-0.403 [ABSTK] -0.612 [OTNCONS] 0.267 [WPRIC]	1.518
HPRIC	-0.468	-0.217 [HBSTK] 0.370 [HEXPT1] -0.544 [OTNCONS] -0.937 [WCONS]	-0.235*
MPRIC	0.817	-0.240 [OTNCONS] 0.289 [WPRIC]	-0.031*
PPRIC	-0.735	-0.197 [PBSTK] 0.106 [PEXPT1] 0.337 [WPRIC]	0.551
WPRIC	-0.746	-0.454 [WBSTK] 0.499 [WEXPT1] 0.229 [APRIC]*	0.449

*Indicates statistically insignificant short-run elasticities at the .10 level or better. Remaining elasticities are highly statistically significant.

DATA APPENDIX

	ADUM	WCONS	OTNCONS	APRIC	APROD	ABSTK	HPRIC	HPROD	HEXPT	HBSTK	MPRIC
1970/71	0	0.36	0.59	53.80	149.00	25.50	28.50	18.52	1.54	0.88	21.70
1971/72	0	0.41	0.61	53.80	162.00	30.02	20.70	22.74	1.42	3.98	24.70
1972/73	0	0.39	0.71	65.00	151.00	18.70	25.40	20.30	1.64	1.03	23.30
1973/74	1	0.40	0.57	128.80	155.00	16.00	28.65	24.50	1.37	1.71	25.50
1974/75	0	0.42	0.45	74.00	230.00	30.10	28.00	13.40	1.37	3.82	32.00
1975/76	0	0.51	0.60	63.70	186.00	87.60	30.50	24.24	1.80	0.27	31.60
1976/77	0	0.52	0.55	64.80	284.00	59.00	32.00	14.34	2.86	1.94	36.90
1977/78	0	0.53	0.28	84.50	313.00	74.20	34.35	23.50	4.29	1.40	40.80
1978/79	0	0.39	0.42	145.00	181.00	94.20	40.30	28.10	7.19	2.17	53.80
1979/80	0	0.47	0.38	153.00	376.00	37.76	47.55	26.00	16.63	3.36	62.90
1980/81	0	0.51	0.32	147.00	322.00	78.95	57.60	30.80	11.82	2.62	72.40
1981/82	0	0.51	0.33	78.00	408.00	101.66	39.40	29.40	9.87	2.81	79.30
1982/83	0	0.47	0.46	94.00	347.00	161.01	34.00	37.60	8.60	2.41	73.90
1983/84	0	0.59	0.52	104.00	242.00	176.95	27.90	16.40	7.62	7.62	65.70
1984/85	0	0.52	0.47	77.40	590.00	90.62	31.05	26.80	6.60	1.70	69.20
1985/86	0	0.42	0.45	80.00	465.00	227.01	34.00	49.20	16.70	1.40	72.50
1986/87	0	0.45	0.46	192.00	250.00	144.28	36.30	30.20	17.40	3.18	80.00
1987/88	0	0.48	0.44	100.00	660.00	144.28	47.95	43.60	17.00	1.01	84.00

	MPROD	PPROD	PPRIC	PBSTK	PEXPT	WPRIC	WPROD	WBSTK	WEXPT	PKINC
1970/71	13.22	155.10	39.00	87.65	6.42	20.35	216.00	68.93	18.33	3489
1971/72	14.45	246.20	33.00	46.02	5.45	21.00	270.00	70.56	33.94	3740
1972/73	13.11	183.10	42.40	89.84	6.08	28.20	232.00	74.75	35.24	4000
1973/74	12.12	275.70	36.70	55.20	7.00	30.25	348.00	48.76	46.23	4481
1974/75	16.37	137.10	47.20	130.31	8.59	20.95	310.00	124.76	55.76	4855
1975/76	18.21	246.80	39.80	63.75	9.66	22.80	396.00	109.54	93.68	5291
1976/77	18.99	103.10	81.50	112.60	6.94	31.35	366.00	91.72	96.85	5744
1977/78	19.68	236.60	57.70	45.90	10.73	36.25	384.00	59.62	102.01	6262
1978/79	20.98	249.90	60.50	100.85	9.00	65.10	320.00	57.28	69.20	6968
1979/80	26.66	210.60	55.40	166.83	8.61	42.35	416.00	64.20	107.42	7682
1980/81	33.39	183.50	78.10	124.73	12.32	46.80	394.00	108.19	114.58	8421
1981/82	33.36	339.10	54.50	81.45	11.07	50.70	450.00	80.97	135.86	9243
1982/83	36.72	218.60	67.50	193.79	19.27	51.00	468.00	101.26	104.19	9724
1983/84	36.42	270.00	58.70	151.24	8.91	31.55	398.00	190.38	109.56	10340
1984/85	37.70	232.40	62.30	184.05	7.20	36.50	426.00	152.31	97.61	11257
1985/86	42.00	244.40	68.00	133.00	5.98	39.90	438.00	113.62	102.58	11861
1986/87	44.00	272.70	72.10	158.30	7.27	54.00	360.00	138.84	122.71	12496
1987/88	42.70	262.20	53.10	164.40	10.60	49.20	494.00	75.60	160.62	13157

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